PROJECT REPORT

TO: ENVIRONMENTAL EVALUATION COMMITTEE **AGENDA DATE: May 13, 2021**

FROM: PLANNING & DEVELOPMENT SERVICES DEPT. **AGENDA TIME 1:30 PM/No. 3**

Information Item Only

CUP20-0025/IS20-0035 Vikings

PROJECT TYPE: Solar Energy Generation & Storage Project SUPERVISOR DIST #5

LOCATION: 2910 & 3000 E. Nelsons Pit Road, Holtville, CA 050-070-018-000, APN -019 & 050-070-021-000 PARCEL SIZE: Approx. 603 acres

GENERAL PLAN (existing) Agriculture GENERAL PLAN (proposed) Recreation/Open Space N/A

ZONE (existing) A-2-RE (General Agriculture-Renewable Energy Overlay) ZONE (proposed) GS-RE (Open Space-Renewable Energy Overlay) N/A

GENERAL PLAN FINDINGS ☐ CONSISTENT ☐ INCONSISTENT ☐ MAY BE/FINDINGS

PLANNING COMMISSION DECISION: HEARING DATE: _____

☐ APPROVED ☐ DENIED ☐ OTHER

PLANNING DIRECTORS DECISION: HEARING DATE: _____

☐ APPROVED ☐ DENIED ☐ OTHER

ENVIROMENTAL EVALUATION COMMITTEE DECISION: HEARING DATE: 05/19/2021

INITIAL STUDY: 20-0035

☐ NEGATIVE DECLARATION ☐ MITIGATED NEG. DECLARATION ☒ EIR

DEPARTMENTAL REPORTS / APPROVALS:

PUBLIC WORKS	☐ NONE	☒ ATTACHED
AG / APCD	☐ NONE	☒ ATTACHED
E.H.S.	☐ NONE	☒ ATTACHED
FIRE / OES	☐ NONE	☒ ATTACHED
OTHER	CEO's Office, IID and Quechan	

REQUESTED ACTION:

(See Attached)

Imperial County Planning & Development Services
(Jim Minnick, Director)
801 MAIN ST., EL CENTRO, CA, 92243 442-265-1736

DRAFT
Initial Study & Environmental Analysis

For:

Vikings Solar Energy Generation & Storage Project
Conditional Use Permit (#20-0025)

Prepared By:

COUNTY OF IMPERIAL

Planning & Development Services Department
801 Main Street
El Centro, CA 92243
(442) 265-1736
www.icpds.com

April 2021

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SECTION I. INTRODUCTION

A. PURPOSE

This document is a ☐ policy-level; ☒ project level Initial Study for evaluation of potential environmental impacts resulting with the proposed Viking Solar Energy Generation and Storage Project.

B. CEQA REQUIREMENTS AND THE IMPERIAL COUNTY "GUIDELINES AND REGULATIONS TO IMPLEMENT CEQA AS AMENDED"

As defined by Section 15063 of the State California Environmental Quality Act (CEQA) Guidelines and Section 7 of the County's "Guidelines for the Implementation of CEQA as Amended", an Initial Study is prepared primarily to provide the Lead Agency with information to use as the basis for determining whether an Environmental Impact Report (EIR), Mitigated Negative Declaration, Negative Declaration, or other environmental document, would be appropriate for providing the necessary environmental documentation and clearance for any proposed project.

☒ According to Section 15065, an EIR is deemed appropriate for a particular proposal if the following conditions occur:

- The proposal has the potential to substantially degrade quality of the environment.
- The proposal has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- The proposal has possible environmental effects that are individually limited but cumulatively considerable.
- The proposal could cause direct or indirect adverse effects on human beings.

☐ According to Section 15070(a), a Negative Declaration is deemed appropriate if the proposal would not result in any significant effect on the environment.

☐ According to Section 15070(b), a Mitigated Negative Declaration is deemed appropriate if it is determined that though a proposal could result in a significant effect, mitigation measures are available to reduce these significant effects to insignificant levels.

This Initial Study is prepared in conformance with the California Environmental Quality Act of 1970, as amended (Public Resources Code, Section 21000 et. seq.); Section 15070 of the State & County of Imperial's Guidelines for Implementation of the California Environmental Quality Act of 1970, as amended (California Code of Regulations, Title 14, Chapter 3, Section 15000, et. seq.); applicable requirements of the County of Imperial; and the regulations, requirements, and procedures of any other responsible public agency or an agency with jurisdiction by law.

Pursuant to the County of Imperial Guidelines for Implementing CEQA, depending on the project scope, the County of Imperial Board of Supervisors, Planning Commission and/or Planning Director is designated the Lead Agency, in accordance with Section 15050 of the CEQA Guidelines. The Lead Agency is the public agency which has the principal responsibility for approving the necessary environmental clearances and analyses for any project in the County.

C. INTENDED USES OF INITIAL STUDY

This Initial Study is an informational document which is intended to inform County of Imperial decision-makers, other responsible or interested agencies, and the general public of potential environmental effects of the proposed applications. The environmental review process has been established to enable public agencies to evaluate environmental consequences and to examine and implement methods of eliminating or reducing any potentially adverse impacts. While CEQA requires that consideration be given to avoiding environmental damage, the Lead Agency and other responsible public agencies must balance adverse environmental effects against other public objectives, including economic and social goals.

The Initial Study prepared for the project will be circulated for a period of 35 days for public and agency review and comments. At the conclusion, if comments are received, the County Planning & Development Services Department will prepare a document entitled "Responses to Comments" which will be forwarded to any commenting entity and be made part of the record within 10-days of any project consideration.

D. CONTENTS OF INITIAL STUDY

This Initial Study is organized as described below to facilitate a basic understanding of the existing setting and environmental implications of the proposed applications.

SECTION 1

I. **INTRODUCTION** presents an introduction to the entire report. This section discusses the environmental process, scope of environmental review, and incorporation by reference documents.

SECTION 2

II. **ENVIRONMENTAL CHECKLIST FORM** contains the County's Environmental Checklist Form. The checklist form presents results of the environmental evaluation for the proposed applications and those issue areas that would have either a significant impact, potentially significant impact, or no impact.

PROJECT SUMMARY, LOCATION AND ENVIRONMENTAL SETTINGS describes the proposed project entitlements and required applications. A description of discretionary approvals and permits required for project implementation is also included. It also identifies the location of the project and a general description of the surrounding environmental settings.

ENVIRONMENTAL ANALYSIS evaluates each response provided in the environmental checklist form. Each response checked in the checklist form is discussed and supported with sufficient data and analysis as necessary. As appropriate, each response discussion describes and identifies specific impacts anticipated with project implementation.

SECTION 3

III. **MANDATORY FINDINGS** presents Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

IV. PERSONS AND ORGANIZATION CONSULTED identifies those persons consulted and involved in preparation of this Initial Study.

V. REFERENCES lists bibliographical materials use in the preparation of this document.

VI. FINDINGS

SECTION 4

VIII. RESPONSE TO COMMENTS (IF ANY)

IX. MITIGATION MONITORING AND REPORTING PROGRAM (IF ANY)

E. SCOPE OF ENVIRONMENTAL ANALYSIS

For evaluation of environmental impacts, each question from the Environmental Checklist Form is summarized and responses are provided according to the analysis undertaken as part of the Initial Study. Impacts and effects will be evaluated and quantified, when appropriate. To each question, there are four possible responses, including:

1. **No Impact**: A "No Impact" response is adequately supported if the impact simply does not apply to the proposed applications.
2. **Less Than Significant Impact**: The proposed applications will have the potential to impact the environment. These impacts, however, will be less than significant; no additional analysis is required.
3. **Potentially Significant Unless Mitigation Incorporated**: This applies where incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact."
4. **Potentially Significant Impact**: The proposed applications could have impacts that are considered significant. Additional analyses and possibly an EIR could be required to identify mitigation measures that could reduce these impacts to less than significant levels.

F. POLICY-LEVEL or PROJECT LEVEL ENVIRONMENTAL ANALYSIS

This Initial Study will be conducted under a ☐ policy-level, ☒ project level analysis. Regarding mitigation measures, it is not the intent of this document to "overlap" or restate conditions of approval that are commonly established for future known projects or the proposed applications. Additionally, those other standard requirements and regulations that any development must comply with, that are outside the County's jurisdiction, are also not considered mitigation measures and therefore, will not be identified in this document.

G. TIERED DOCUMENTS AND INCORPORATION BY REFERENCE

Information, findings, and conclusions contained in this document are based on incorporation by reference of tiered documentation, which are discussed in the following section.

1. Tiered Documents

As permitted in Section 15152(a) of the CEQA Guidelines, information and discussions from other documents can be included into this document. Tiering is defined as follows:

"Tiering refers to using the analysis of general matters contained in a broader EIR (such as the one prepared for a general plan or policy statement) with later EIRs and negative declarations on narrower projects; incorporating by reference the general discussions from the broader EIR; and concentrating the later EIR or negative declaration solely on the issues specific to the later project."

Tiering also allows this document to comply with Section 15152(b) of the CEQA Guidelines, which discourages redundant analyses, as follows:

"Agencies are encouraged to tier the environmental analyses which they prepare for separate but related projects including the general plans, zoning changes, and development projects. This approach can eliminate repetitive discussion of the same issues and focus the later EIR or negative declaration on the actual issues ripe for decision at each level of environmental review. Tiering is appropriate when the sequence of analysis is from an EIR prepared for a general plan, policy or program to an EIR or negative declaration for another plan, policy, or program of lesser scope, or to a site-specific EIR or negative declaration."

Further, Section 15152(d) of the CEQA Guidelines states:

"Where an EIR has been prepared and certified for a program, plan, policy, or ordinance consistent with the requirements of this section, any lead agency for a later project pursuant to or consistent with the program, plan, policy, or ordinance should limit the EIR or negative declaration on the later project to effects which:

(1) Were not examined as significant effects on the environment in the prior EIR; or

(2) Are susceptible to substantial reduction or avoidance by the choice of specific revisions in the project, by the imposition of conditions, or other means."

2. Incorporation By Reference

Incorporation by reference is a procedure for reducing the size of EIRs/MND and is most appropriate for including long, descriptive, or technical materials that provide general background information, but do not contribute directly to the specific analysis of the project itself. This procedure is particularly useful when an EIR or Negative Declaration relies on a broadly drafted EIR for its evaluation of cumulative impacts of related projects (Las Virgenes Homeowners Federation v. County of Los Angeles [1986, 177 Ca.3d 300]). If an EIR or Negative Declaration relies on information from a supporting study that is available to the public, the EIR or Negative Declaration cannot be deemed unsupported by evidence or analysis (San Francisco Ecology Center v. City and County of San Francisco [1975, 48 Ca.3d 584, 595]).

When an EIR or Negative Declaration incorporates a document by reference, the incorporation must comply with Section 15150 of the CEQA Guidelines as follows:

- The incorporated document must be available to the public or be a matter of public record (CEQA Guidelines, Section 15150[a]). The General Plan EIR is available, along with this document, at the County of Imperial Planning & Development Services Department, 801 Main Street, El Centro, CA 92243, phone (442) 265-1736.
- This document must be available for inspection by the public at an office of the lead agency (CEQA Guidelines Section 15150[b]). These documents are available at the County of Imperial Planning & Development Services Department, 801 Main Street, El Centro, CA 92243; phone (442) 265-1736.
- These documents must summarize the portion of the document being incorporated by reference or briefly describe information that cannot be summarized. Furthermore, these documents must describe the relationship between the incorporated information and the analysis in the tiered documents (CEQA Guidelines Section 15150[c]). As discussed above, the tiered EIRs address the entire project site and provide background and inventory information and data which apply to the project site. Incorporated information and/or data will be cited in the appropriate sections.
- These documents must include the State identification number of the incorporated documents (CEQA Guidelines Section 15150[d]). The State Clearinghouse Number for the 1993 County of Imperial General Plan Final EIR is SCH #93011023.
- The material to be incorporated in this document will include general background information (CEQA Guidelines Section 15150[f]).

SECTION II. ENVIRONMENTAL CHECKLIST

1.	**Project Title:**	Vikings Solar Energy Generation and Storage Project
2.	**Lead Agency Name and Address:**	Imperial County Planning & Development Services Department
3.	**Contact Person and Phone Number:**	Diana Robinson, Planner III, 442-265-1736
4.	**Address:**	801 Main Street, El Centro CA, 92243
5.	**E-mail:**	DianaRobinson@co.imperial.ca.us

6. **Project Location:** The proposed Project would be located on approximately 604 acres of private and Imperial County-owned land located at the intersection of Nelson Pit Road and Graeser Road in the western part of unincorporated Imperial County (Figure 1 and 2). The Project site is located approximately 5.5 miles east of the City of Holtville in Section 36 within Township 15 South, and Range 16 East of the San Bernardino Base and Meridian (SBB&M) of the "Holtville East" topographic quadrangles 7.5-minute (Assessor's Parcel Numbers [APNs] 050-070-018-000, 050-070-019 and 050-070- 021).

7. **Project Sponsor's Name and Address:** Vikings Energy Farm, LLC

8. **General Plan Designation:** Two of the parcels (APN 050-070-18; -019) are designated as Agriculture in the Imperial County General Plan. APN 050-070-21 is designated as "Recreation/Open Space". All are located within a Renewable Energy Overlay Zone.

9. **Zoning:** Project parcels 050-070-019 and -018 are both zoned A-2-RE (General Agriculture with Renewable Energy Overlay) and parcel 050-070-021 is zoned GS-RE (Government/Special Public Zone with Renewable Energy Overlay) (Figure 3).

10. **Description of Project:** Vikings Solar Energy Farm, LLC (Project Applicant) proposes to develop a nominal 150-megawatt (MW) solar photovoltaic (PV) energy generation project with an integrated 150 MW/600MW hours (MWh) battery storage project. The electrical energy produced would be conducted through the proposed 230 kilovolt (kV) switching station and delivered to the Imperial Irrigation District's (IID) 230 kV KN/KS transmission line via a gen-tie line approximately 120 feet in height. The solar energy generation facility, battery storage system, switching station and gen-tie line are collectively referred to as the "Proposed Project" or "Project."

The Project proposes to utilize either thin film or crystalline solar (PV) technology modules mounted either on fixed frames or horizontal single-axis tracker (HSAT) systems. The fixed frame PV module arrays would be mounted on racks that would be supported by driven piles. The fixed-frame racks would be secured at a fixed tilt of 20 to 30 degrees from horizontal facing a southerly direction. Individual PV modules would be mounted two high on a fixed frame, providing a two-foot ground clearance and resulting in the tops of the panels at approximately 7.5 feet above the ground. The fixed PV modules would be arranged in arrays spaced approximately 15 to 25 feet apart (pile-to-pile) to maximize performance and to allow access for panel cleaning. If HSAT technology is used, the PV modules would rotate around the north-south HSAT axis so that the PV modules would continue to face the sun as it moves across the sky throughout the day. The PV modules would

reach their maximum height (up to nine [9] feet above the ground) at both sunrise and sunset. At noon, or when stowed during high winds, when the HSAT system is rotated so that the PV modules would be horizontal with a nominal height of about six (6) feet above the ground.

The Project includes a battery storage system that would be located on the southern boundary of APN 050-070-019 just north of Nelson Pit Road and would consist of either lithium ion (Li-ion) or flow batteries. Depending on the selection of the battery technology, the batteries would either be housed in storage containers or storage buildings.

The electrical energy produced by the Project would be conducted through a new project substation located on the southern boundary of APN 050-070-019 (See Figure 2). This substation would take the delivery of the up to 34.5 kV power from the project and increase the voltage of the electricity to 230 kV, where it would feed into the interconnection switching station, adjacent to the project substation, for metering and delivery to the IID 230 kV KN/KS Line.

Electricity generated by the facility could be sold under the terms of a power purchase agreement (PPA) with a power purchaser (i.e., utility service provider). At the end of the PPA term, the owner of the facility may choose to enter into a subsequent PPA, update technology and re-commission, or decommission remove the generating facility and its components and restore the property.

11. **Surrounding Land Uses and Setting:** The Project site is generally located south of Kavanaugh Road, west of Graeser Road, the East Highline Canal and IID's KN/KS 230 kV transmission line, approximately 1.8 miles north of Interstate 8 (I-8). It should be noted however that the northwest portion of the solar energy facility site is bisected by Graeser Road and the East Highline Canal (APN 050-070-019). The solar energy facility site is surrounded by agricultural uses on the west and by open desert on the north, south and east. The Holtville Airport is located 1.6 miles to the north, and the nearest developed or proposed solar PV projects are located approximately 7.25 miles to the south, across State Route 98.

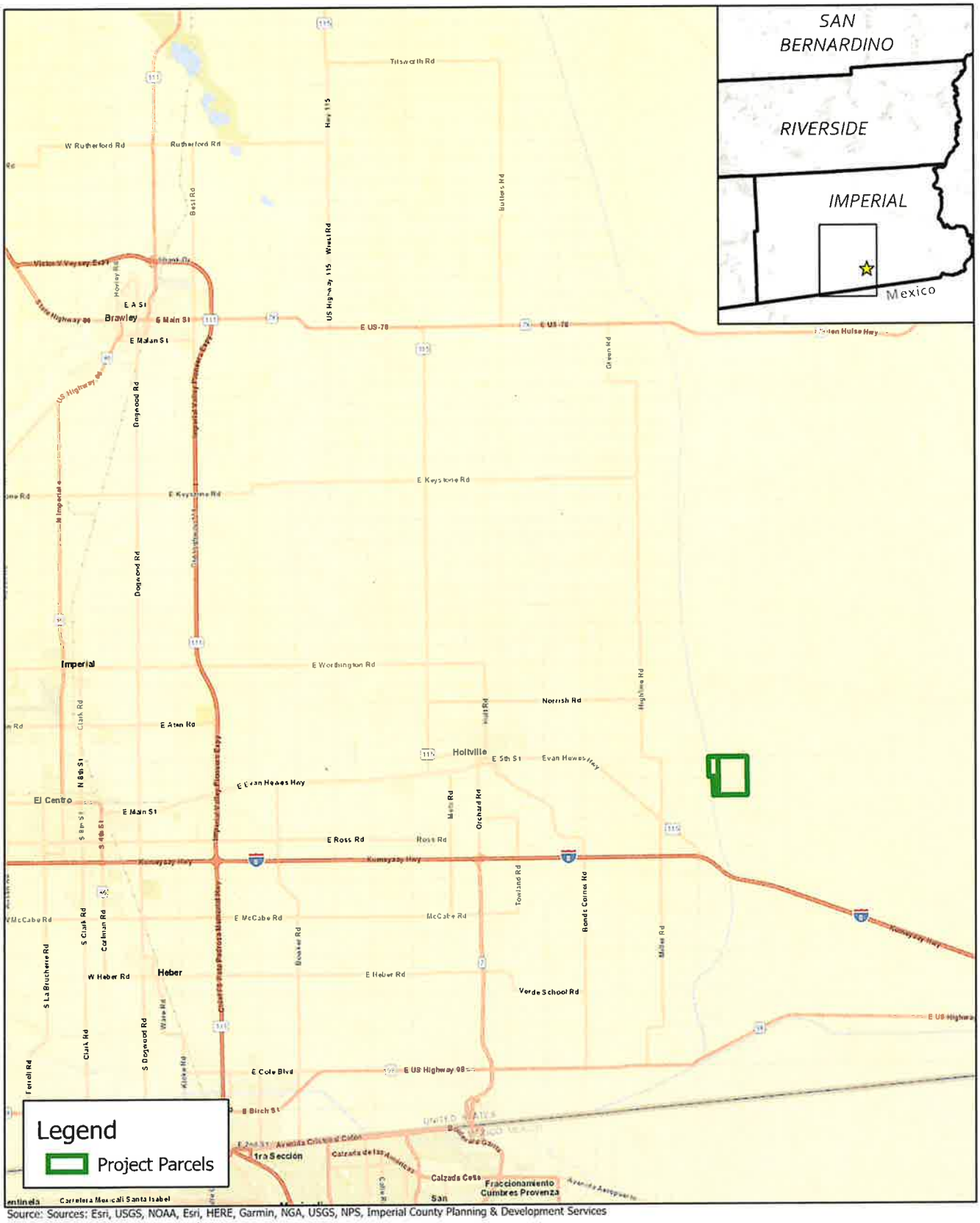
12. **Other Public Agencies Whose Approval is Required (e.g., permits, financing approval, or participation agreement):** To approve a Conditional Use Permit (CUP), other agency permits and approvals are listed below:

    - Section 404 Permit: United States Army Corps of Engineers, Clean Water Act (CWA) Section 404 Permit may be required, as necessary. Section 401 Permit: Colorado Regional Water Quality Control Board CWA Section 401 Permit may be required, as necessary.
    - Streambed Alteration Agreement: California Department of Fish and Wildlife Streambed Alteration Agreement under Section 1602 of the California Fish and Game Act may be required, as necessary.
    - Transportation Permit for oversized/overweight vehicles: Caltrans
    - Encroachment Permit: Imperial Irrigation District.
    - Imperial County Air Pollution Control District: Authority to Construct and Permit to Operate.
    - State Water Resources Control Board: National Pollutant Discharge Elimination System General Construction Stormwater Permit.
    - Regional Water Quality Control Board (Region 8): Waste Discharge Requirements.

13. **Native American Consultation: Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1?**

In compliance with Assembly Bill 52 (Chapter 532, Statutes 2014), the ICPDSD sent letters to one (1) California Native American Tribe on March 26, 2021, providing notification of the Project and an invitation to participate in consultation. Under AB-52, California Native American Tribes have 30 days from the date of receipt of the notice to request consultation.

On April 8, 2021, the Quechan Tribe Historic Preservation Officer requested consultation with the County.



Source: Sources: Esri, USGS, NOAA, Esri, HERE, Garmin, NGA, USGS, NPS, Imperial County Planning & Development Services

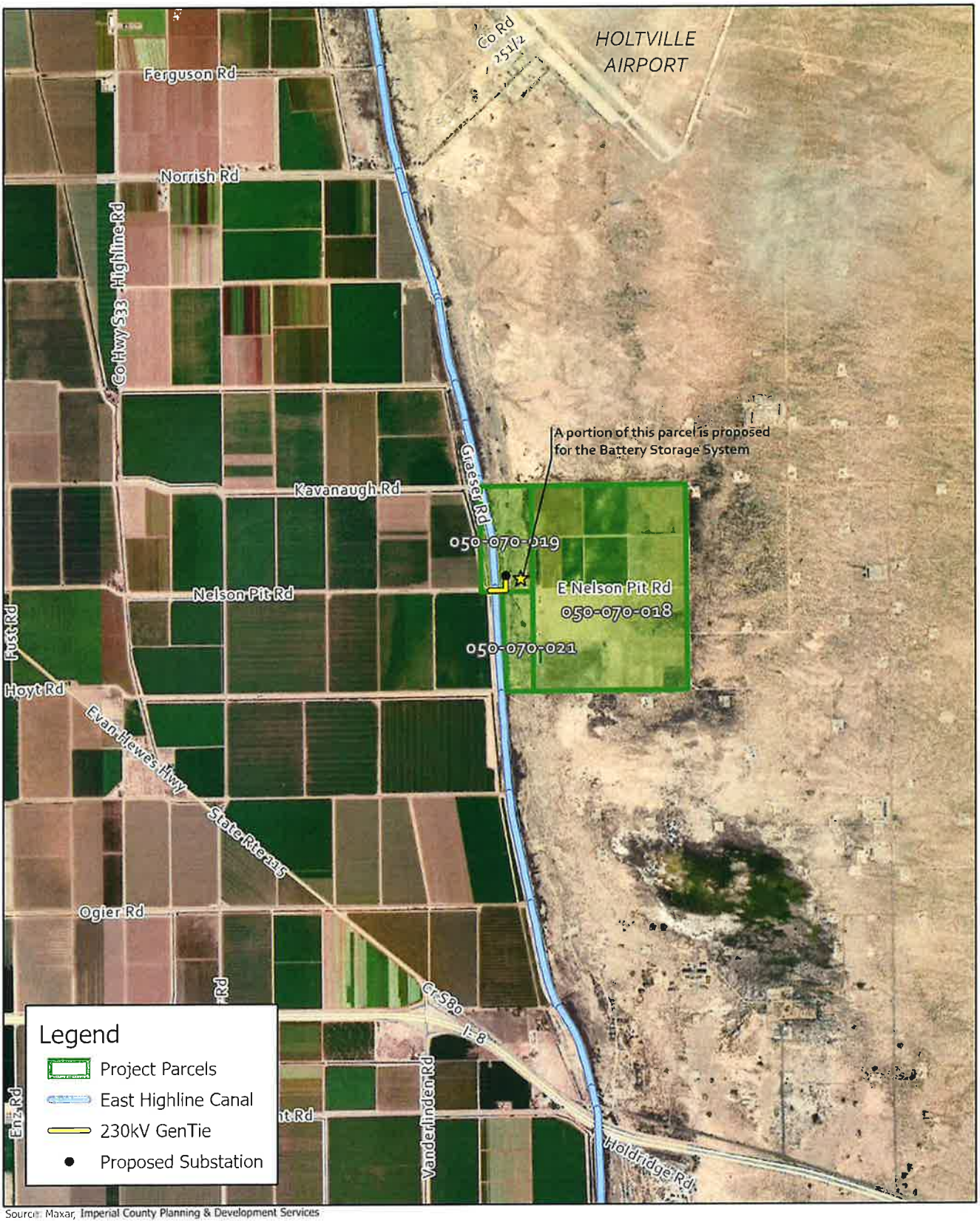
N

0 3.75 7.5 Miles

Regional Location

Vikings Solar Energy Generation and Storage Project

Figure 1



Source: Maxar, Imperial County Planning & Development Services

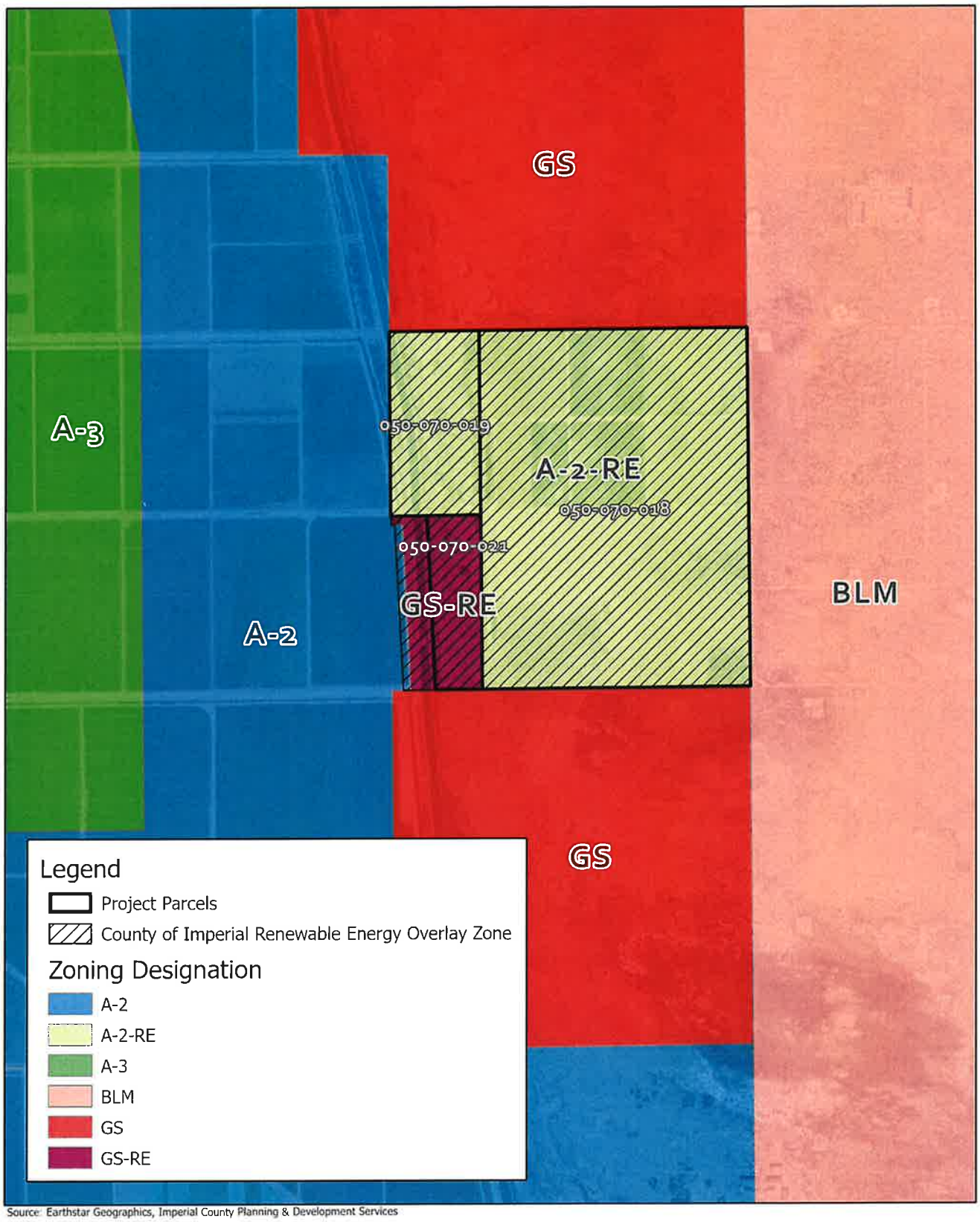
N

0 0.5 1 Miles

Project Location

Vikings Solar Energy Generation and Storage Project

Figure 2



Source: Earthstar Geographics, Imperial County Planning & Development Services

N

0 0.4 0.8 Miles

Existing Zoning Designation
Vikings Solar Energy Generation and Storage Project
Figure 3

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☒ Aesthetics	☒ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Energy
☒ Geology /Soils	☒ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials
☒ Hydrology / Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☐ Noise	☐ Population / Housing	☒ Public Services
☐ Recreation	☒ Transportation/Traffic	☒ Tribal Cultural Resources
☒ Utilities / Service Systems	☐ Wildfire	☒ Mandatory Findings of Significance

ENVIRONMENTAL EVALUATION COMMITTEE (EEC) DETERMINATION

After Review of the Initial Study, the Environmental Evaluation Committee has:

☐ Found that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ Found that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ Found that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ Found that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ Found that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier Final EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier Final EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE DE MINIMIS IMPACT FINDING: ☐ Yes ☐ No

EEC VOTES	YES	NO	ABSENT
PUBLIC WORKS	☐	☐	☐
ENVIRONMENTAL HEALTH SVCS	☐	☐	☐
OFFICE EMERGENCY SERVICES	☐	☐	☐
APCD	☐	☐	☐
AG	☐	☐	☐
SHERIFF DEPARTMENT	☐	☐	☐
ICPDS	☐	☐	☐

Jim Minnick, Director of Planning/EEC Chairman

Date:

PROJECT SUMMARY

Project Location

The proposed Project would be located on approximately 604 acres of private and Imperial County-owned land located at the intersection of Nelson Pit Road and Graeser Road in the western part of unincorporated Imperial County (Figure 3-1 and 3-2). It is approximately 5.5 miles east of the City of Holtville in Section 36 within Township 15 South, and Range 16 East of the San Bernardino Base and Meridian {SBB&M) of the "Holtville East" topographic quadrangles 7.5-minute (Assessor's Parcel Numbers [APNs]) 050-070- 018-000, 050-070-019 and 050-070- 021.

Project Summary

The Project proposes to utilize either thin film or crystalline solar photovoltaic (PV) technology modules mounted either on fixed frames or horizontal single-axis tracker (HSAT) systems. The fixed frame PV module arrays would be mounted on racks that would be supported by driven piles. The fixed-frame racks would be secured at a fixed tilt of 20 to 30 degrees from horizontal facing a southerly direction. Individual PV modules would be mounted two high on a fixed frame, providing a two-foot ground clearance and resulting in the tops of the panels at approximately 7.5 feet above the ground. The fixed PV modules would be arranged in arrays spaced approximately 15 to 25 feet apart (pile-to-pile) to maximize performance and to allow access for panel cleaning .

If HSAT technology is used, the PV modules would rotate around the north-south HSAT axis so that the PV modules would continue to face the sun as it moves across the sky throughout the day. The PV modules would reach their maximum height (up to nine [9] feet above the ground) at both sunrise and sunset. At noon, the HSAT system is rotated so that the PV modules would be horizontal with a nominal height of about six (6) feet above the ground. The individual PV systems would be arranged in large arrays by placing them in columns spaced approximately 10 feet apart.

The battery storage system would be constructed as a multiple structure facility, consisting of up to 20 battery modules at full build out, the footprint of which would be up to 450 square feet per module. Each module will house the batteries, mounting racks and associated electrical equipment. Each module will be of a metal frame construction, retrofitted to add insulation, air-conditioning, and fire suppression for battery reliability, with separate rooms for the electronic controls, inverters, and rectifiers. Due to the slightly positive pressure required within each module to ensure functionality of the fire suppression system, the modules will not be vented. Each module will utilize a supply and return air conditioning system; this system has a fresh air (economizer mode) intake system and is also referred to as a closed loop system.

The electrical energy produced by the project would be conducted through a new project substation would be constructed on the southern boundary of APN 050-070-019. This substation would take the delivery of the up to 34.5 kV power from the project and increase the voltage of the electricity to 230 kV, where it would feed into the interconnection switching station for metering and delivery to the IID 230 kV KN/KS Line.

Environmental Setting

The Project area is located on a combination of private land (two parcels) and County-owned land (one parcel) in the western part of unincorporated Imperial County. The Project area is idle land and agriculture. The Project area is located at the intersection of Nelson Pit Road and Graeser Road and is accessible from I-8 via Evan Hewes Highway and Graeser Road. The northwest portion of the solar energy facility site is bisected by Graeser Road and the East Highline Canal (APN 050-070-019). The Holtville Airport is located 1.6 miles to the north, and the nearest developed or proposed solar PV projects are located approximately 7.25 miles to the south, across State Route 98.

General Plan Consistency

The Project is located within the unincorporated area of Imperial County. Two of the parcels (APN 050-070-18; -019) are designated as Agriculture in the Imperial County General Plan. APN 050-070-21 is designated as "Recreation/Open Space". All are located within a Renewable Energy Overlay Zone (Figure 3).

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a) Earlier Analysis Used. Identify and state where they are available for review.

    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

    a) The significance criteria or threshold, if any, used to evaluate each question; and

    b) The mitigation measure identified, if any, to reduce the impact to less than significance.

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

I. AESTHETICS.

Except as provided in Public Resources Code Section 21099, would the project:

a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion:

a) No Impact. There are no designated scenic vistas in the Project vicinity. A visual resources impact assessment was prepared for the Project and it was determined that the Project would not have a substantial adverse effect on the expansive views from the three key observation points (KOPs) selected for analysis (SWCA 2021a). Rather, the thin horizontal edge of solar arrays and rectangular geometric shapes of the project facilities would be absorbed into the existing vegetation and built features with similar lines, forms, and colors that comprise the landscape. No adverse impacts on a scenic vista have been identified and this environmental parameter is not proposed for further analysis in the EIR.

b) No Impact. There are no designated or eligible scenic highways in the project vicinity. The nearest highway is Highway 115 located 1.4 miles southwest of the Project site. This highway is not a designated scenic highway. The nearest eligible state scenic highway according to Caltrans California State Scenic Highway System Map is Route-78, located 39.82 miles northwest of the Project site.

The Project vicinity does not contain any rock outcroppings and has very few trees. According to the Class III Cultural Resources Inventory Report prepared for the Project, there are no historic buildings within the project vicinity (SWCA 2021e). As such, construction of the Project is not anticipated to substantially damage scenic resources. No impacts have been identified for this issue area and this environmental parameter is not proposed for further analysis in the EIR.

c) Less than Significant Impact. The existing visual character from public viewpoints would not be substantially altered in the project vicinity. From KOP 1, which represents an elevated view overlooking the Project site, the proposed gen-tie line would be visible but would be mostly unnoticed due to the current existing structures that obscure the view. From KOP 2, the Project would visually blend in with the existing built features and irrigated

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agricultural fields between the viewer and the Project site. The view from KOP 3 is mostly blocked by existing vegetation, residential and agricultural structures, and transmission lines running east to west across the landscape. As previously described, the Project would not substantially degrade the existing visual character or quality of public views from this distance; rather, the horizontal and rectangular project facilities would appear to be absorbed into the existing vegetation and built features that comprise the broader landscape. The project would not substantially degrade existing visual character and quality and the impact would be less than significant (SWCA 2021a).

d) Less than Significant Impact. The Project would not include any substantial source of nighttime light in the Project vicinity. Any lighting required for safety and security within the Project area would be hooded and oriented downward. The glare analysis for the Project concluded that viewers at KOP 3 may experience glare from the northeastern-most project array area if no vegetation or structures are in the field of view, and that the other array areas will not produce glare. KOP 3 will have potential for glare for approximately 10 minutes a day for 2 months a year (SWCA 2021a). However, given the presence of existing vegetation and structures, it likely that these effects would be less than significant.

A Visual Resource Assessment for the Vikings Solar Energy Storage Project has been prepared for the Project and the EIR will evaluate potential impacts associated with security lighting and potential glint and glare from the solar panels.

II. AGRICULTURAL AND FOREST RESOURCES.

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☒	☐	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

Discussion:

a) Potentially Significant Impact. According to the most recent California Department of Conservation Farmland Mapping (2018) the Project site contains: Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance and Other Land. All 18.36 acres of Prime Farmland and 236.8 acres of Farmland of Local Importance are located within parcel 050-070-018. Parcel 050-070-019 contains 0.47 acres of Farmland of Statewide Importance with the remainder being Other Land. Parcel 050-070-021 contains only Other Land. There are no Williamson Act lands within or adjacent to the project area.

The Land Evaluation Site Assessment (LESA) performed for the Project resulted in a Land Evaluation score of 21.42 and a Site Assessment score of 26.25, for a cumulative total of 47.67 points out of 100 (SWCA 2020a). Based on the California Agricultural LESA Model methodology and final score, the Project site is considered to represent a significant agricultural resource and its temporary conversion to a non-agricultural use would result in a significant impact on agricultural resources. The EIR will evaluate the project's conversion of important farmland to a non-agricultural use and propose feasible mitigation, as appropriate, to reduce the impacts to less-than-significant levels.

b) No Impact. Project parcels 050-070-019 and -018 are both zoned A-2-RE (General Agriculture with Renewable Energy Overlay) and parcel 050-070-021 is zoned GS-RE (Government/Special Public Zone with Renewable Energy Overlay). Solar energy facilities are allowed with the A-2-RE and GS-RE zones, subject to a Conditional Use Permit. For these reasons, the proposed project would not conflict with existing zoning for agricultural use, or a Williamson Act contract. No impacts are identified for this issue area. This environmental parameter is not proposed for detailed analysis in the EIR.

c) No Impact. Neither the Project area nor surrounding areas are used for timber production or are defined as forest lands. The proposed Project would not conflict with any zoning designations designed to preserve timber or agricultural resources. No impacts are identified for this issue area. This environmental parameter is not proposed for further analysis in the EIR.

d) No Impact. There are no existing forest lands either on-site or in the Project vicinity. The proposed Project would not result in the loss of forest land or conversion of forest land to non-forest use. Therefore, no impact would occur under this threshold. This environmental parameter is not proposed for further analysis in the EIR.

e) No Impact. The proposed Project does not include changes in the existing environment which, due to their location or nature, would result in the conversion of neighboring farmland to non-agricultural use. Proximate publicly owned lands include the U.S. Bureau of Land Management (BLM) Imperial Sand Dunes Recreational Area (i.e., Algodones Dunes), located approximately 12 miles to the east; BLM Hot Springs, located approximately

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)

2 miles south of the project site (BLM 2021); and several wildlife areas and wildlife refuges located approximately 22 miles to the northwest of the Project site (California Department of Fish and Wildlife 2015). There are no publicly owned lands or other existing easements in the neighboring areas; therefore, for the purposes of this assessment, there is no protected resource land within the neighboring areas. No impacts are identified for this issue area. This environmental parameter is not proposed for further analysis in the EIR.

III. AIR QUALITY.

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

Discussion:

a) Less Than Significant Impact. The Project area is located within the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD), in the Salton Sea Air Basin (SSAB). The SSAB is classified by the State as a nonattainment area for ozone (O3) as well as a nonattainment area for the State standards pertaining to particulate matter less than 10 microns (PM10). In addition, the SSAB is classified as a serious nonattainment area for the PM10 standard. An air quality and greenhouse gas emission analysis has been prepared for the Project (SWCA 2021b) and the EIR will evaluate potential air quality impacts.

With or without the implementation of the proposed mitigation measures, the Project's emissions from both short-term construction and long-term operation do not exceed the applicable ICAPCD thresholds of significance nor the South Coast Air Quality Management District (SCAQMD) Greenhouse Gas (GHG) annual threshold of significance, thus the Project is not anticipated to conflict with or obstruct implementation of the applicable air quality plan and impacts would be less than significant (SWCA 2021b).

b) Less Than Significant Impact. The SSAB is classified by the State as a nonattainment area for O3 as well as a nonattainment area for the State standards pertaining to PM10. In addition, the SSAB is classified as a serious nonattainment area for the PM10 standard. With or without the implementation of mitigation measures, the Project's emissions from both short-term construction and long-term operation do not exceed the applicable ICAPCD thresholds of significance nor the SCAQMD GHG annual threshold of significance, thus the impacts to air

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	***No Impact*** **(NI)**

quality are considered less than significant (SWCA 2021b). The EIR will evaluate Project-related increases of criteria pollutant emissions.

c and d) Less Than Significant Impact. The Project area does not contain any permanent residents or sensitive receptors. Although impacts would be less than significant, the ICAPCD CEQA Air Quality Handbook contains standard mitigation measures for construction equipment and fugitive PM10 that shall be implemented at all construction sites, as appropriate and feasible, regardless of site size. The ICAPCD CEQA Air Quality Handbook also contains discretionary measures for fugitive PM10 control that shall be implemented at non-residential construction sites greater than five acres and residential construction sites greater than ten acres. The Project is non-residential and is greater than 5 acres; therefore, all standard and discretionary measures for construction-related emissions shall apply. The Project is considered a Tier 1 project and is required to implement all standard operational mitigation measures.

Potential sources of odors during construction activities include diesel exhaust from construction equipment and diesel vehicles. These odors would not affect a substantial number of people and dissipate as a function of distance from the source. While the proposed Project's odor impact is expected to be less than significant, and the Project is not expected to expose sensitive receptors to substantial pollutant concentrations, these impacts will be further evaluated in the EIR.

IV. BIOLOGICAL RESOURCES.

Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Discussion:

a) Potentially Significant Unless Mitigation Incorporated. Nine special-status plant species were identified as potentially occurring in the Project area. The occurrence potential is considered to be low to unlikely for all of these, based on habitat conditions within the project site (SWCA 2021c).

Fifteen special-status species of fauna were reported as having the potential to occur within the Project area. One special-status wildlife species was found on-site during the December 2020 survey, a western burrowing owl (Athene cunicularia) (non-nesting) (SWCA 2021c).

One mammal, the Yuma hispid cotton rat (*Sigmodon hispidus eremicus*), is considered to be unlikely to occur on the Project site, and to have a moderate potential for occurrence near the project site. Project implementation would result in the direct removal of habitat on-site. While the majority of the site is characterized as disturbed/ruderal and active agriculture with scattered areas of creosote and white bursage scrub, it could provide foraging habitat for birds and mammals, neither of which are anticipated to be directly impacted by Project construction. Because of their mobility, these animals generally move out of harm's way and thus unlikely to be injured or killed during grading and construction (SWCA 2021c).

Nesting birds could occur anywhere within or adjacent to the Project site, and as such could be directly or indirectly impacted during project construction. Pre-construction nest surveys are recommended if work is scheduled during the breeding bird season, generally considered to be from 1 February to 31 August. If found, nests must be protected either by buffer areas or timing to avoid disturbance to active nests. Impacts during operations are not anticipated. There are specific survey requirements for burrowing owls, known to nest in the vicinity (SWCA 2021c). The EIR will present the results of the Biological Resources Technical Report (SWCA 2021c) and the Aquatic Resources Technical Report (SWCA 2021d) and identify feasible mitigation measures to reduce impacts to below a level of significance.

b) Potentially Significant Impact. Riparian vegetation consists of broadleaf cattail (*Typha latifolia*), arrow weed (*Pluchea sericea*), giant wild rye (*Arundo donax*), and saltcedar (*Tamarix* sp.). The Aquatic Resources Technical Report (SWCA 2021d) identified 2.8 acres of Wetland Waters of the U.S., 8.4 acres of Non-Wetland Waters of the

U.S., 0.6 acres of non-wetland Waters of the State and 6.58 acres of CDFW Jurisdictional Streambed in the project area. While the layout has been designed to avoid all drainages, wetlands, and riparian habitats in the immediate vicinity, the current location of the battery storage component could result in potential impacts to unnamed Reservoir Number 3 which has 0.836 acres of CDFW Jurisdictional Streambed. Thus, there would be Potentially Significant impacts.

c) Potentially Significant Impact. The Project site contains 6.508 acres (3,020 linear feet) of CDFW jurisdictional streambed and 2.872 acres (2,420 linear feet) of Waters of the U.S. However, these areas would be avoided and there would be no impact. The Project layout has been designed to avoid all drainages, wetlands, and riparian habitats in the immediate vicinity. However, the current location of the battery storage component could result in potential impacts to unnamed Reservoir Number 3 which has 0.836 acres of CDFW Jurisdictional Streambed. Indirect impacts to drainages may result from erosion and stormwater flows from the Project site into drainages below the project elevation. However, the Project proponent will be required to prepare a storm water pollution prevention plan (SWPPP) which will include best management practices (BMPs) to avoid and/or control site runoff, sedimentation and erosion. These measures should be sufficient to prevent impacts to aquatic resources (SWCA 2021d).

d) Less Than Significant Impact. The Project site currently provides unrestricted wildlife movement for animals of all sizes within the property. There are no federal, state, or local parks or designated wildlife corridors or conservation areas on or adjacent to the subject property. Similarly, there are no U.S. Fish and Wildlife (USFWS)-designated critical habitat or Habitat Conservation Plan and no California Department of Fish and Wildlife (CDFW) Natural Community Conservation Plan at or adjacent to the Project site. The Project will not interfere substantially with the currently restricted movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites (SWCA 2021c). Thus, the impact would be less than significant.

e) Potentially Significant Unless Mitigation Incorporated. The Imperial County General Plan Open Space and Conservation Element (County of Imperial 2016) contains an Open Space Conservation Policy that requires detailed investigations to be conducted to determine the significance, location, extent, and condition of natural resources in the County, and to notify any agency responsible for protecting plant and wildlife before approving a project which would impact a rare, sensitive, or unique plant or wildlife habitat. As noted above, implementation of the Project has the potential to result in significant impacts to candidate, sensitive, or special status species, and washes and ephemeral streams. Such impacts could conflict with Open Space and Conservation Element and are considered potentially significant.

f) No Impact. The Specific Plan is not located within an area that is subject to a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No impact would occur.

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)
V. CULTURAL RESOURCES.				
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☒	☐	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines § 15064.5?	☒	☐	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

Discussion:

a, b, and c) Potentially Significant Impact. A confidential records search of the California Historical Resources Information System (CHRIS), a Sacred Lands File (SLF) search through the Native American Heritage Commission (NAHC), archival research, and a pedestrian field survey were used to evaluate the presence or likelihood of the presence of cultural resources within the Project area. A record search conducted by the SCIC identified 50 previously recorded resources within a 0.8- km (0.5-mile) radius of the Project area. Of these 50 resources, three are mapped within the Project area itself. The search of the SLF maintained by the NAHC was negative within the Project area (SWCA 2021e). The NAHC noted that negative results may not indicate the absence of Native American cultural resources in the area and provided a contact list of 16 Native American tribal organizations that may have knowledge of cultural resources in or near the study area. The County, as lead agency, is conducting its own Native American consultation for the Project, as part of its AB 52 responsibilities.

The locations of the three previously recorded resources were investigated but two of them (P-13-000304/CA-IMP-304 and P-13-003213/CA-INY-3213) were unable to be relocated. Both are presumed either misplotted or destroyed. As a consequence, the two resources will not be impacted by the Project (SWCA 2021e).

The third previously recorded resource (P-13-008333/CA-INY-7835) is the East Highline Canal, which has been previously recommended eligible for the California Register of Historical Resources (CRHR). It therefore qualifies as a historical resource under CEQA, and any adverse impacts to the resources could constitute a significant impact on the environment. This resource will be left in place and avoided and as a consequence will not be impacted by the Project (SWCA 2021e).

Project-related ground disturbing activities could cause a substantial adverse change in a historical or archaeological resource. Although unlikely, there is a potential for unknown human remains to be unearthed during earthwork activities. Therefore, a potentially significant impact is identified for these resources. The findings of the cultural resources report will be included in the EIR analysis and feasible mitigation measures identified that would avoid or reduce significant impacts to below a level of significance.

VI. ENERGY.

Would the project:

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Discussion:

a) Less Than Significant. No wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation would occur. This is considered a less than significant impact and will be further evaluated in the EIR.

b) No Impact. Implementation of the Specific Plan would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and no impacts would occur under this criteria.

VII. GEOLOGY AND SOILS.

Would the project:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:				
1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☒	☐
2) Strong seismic ground shaking?	☐	☒	☐	☐
3) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
4) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994),	☐	☐	☒	☐

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)
creating substantial direct or indirect risks to life or property?				
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

Discussion:

a.1) Less Than Significant Impact. The Project area is located in southern California, an area known to be geologically active, and which is subject to seismic events. The Project site does not lie within a currently delineated State of California, Alquist-Priolo Earthquake Fault Zone (Landmark Consulting 2021). Well-delineated fault lines cross through this region as shown on California Geological Survey [CGS] maps; however, no active faults are mapped in the immediate vicinity of the site. Therefore, active fault rupture is unlikely to occur at the Project site. However, because of the high tectonic activity and deep alluvium of the region, the potential for surface rupture cannot be precluded on undiscovered or new faults that may underlie the site. A soils and geology report was prepared for the Project (Terraphase Engineering, 2019) and will be discussed in the EIR. The EIR will evaluate the potentially significant adverse impacts related to seismicity, fault-rupture and ground failure.

a.2) Potentially Significant Impact Unless Mitigation Incorporated. The Project site is located in the seismically active Imperial Valley of southern California with numerous mapped faults traversing the region including the San Andreas, San Jacinto, and Elsinore Fault Zones in southern California. The Imperial fault represents a transition from the more continuous San Andreas fault to a more nearly echelon pattern characteristic of the faults under the Gulf of California). A search of known faults or seismic zones that lie within a 62- mile (100-kilometer) radius of the Project site was conducted. The criterion for fault classification adopted by the CGS defines Earthquake Fault Zones along Holocene-active or pre-Holocene faults. Earthquake Fault Zones are regulatory zones that address the hazard of surface fault rupture. A Holocene-active fault is one that has ruptured during Holocene time (within the last 11,700 years). A pre-Holocene fault is a fault that has not ruptured in the last 11,700 years. Pre-Holocene faults may still be capable of surface rupture in the future, but are not regulated by the Alquist-Priolo act (Landmark Consulting, 2021).

A review of the current Earthquake Fault Zone maps indicates that the nearest zoned fault to the Project site is the Rico fault located approximately 7.1 miles west and the Imperial fault located approximately 7.9 miles west to southwest. The primary seismic hazard at the Project site is the potential for strong groundshaking during earthquakes along the Rico, Imperial and Brawley Faults (Landmark Consulting 2021).

a.3) Potentially Significant Unless Mitigation Incorporated. Liquefaction is the loss of soil strength from sudden shock (usually earthquake shaking), causing the soil to become a fluid mass. Liquefaction describes a phenomenon in which saturated soil loses shear strength and deforms as a result of increased pore water pressure induced by strong ground shaking during an earthquake. Dissipation of the excess pore pressures will

produce volume changes within the liquefied soil layer, which can cause settlement. Shear strength reduction combined with inertial forces from the ground motion may also result in lateral migration (lateral spreading). Factors known to influence liquefaction include soil type, structure, grain size, relative density, confining pressure, depth to groundwater (typically occurs in the upper 50 feet), and the intensity and duration of ground shaking. Soils most susceptible to liquefaction are saturated, loose sandy soils and low plasticity clay and silt (Landmark Consulting 2021).

Groundwater at the project site is likely to be present at the interface between surface sands and underlying clays. There is uncertainty in the accuracy of short-term water level measurements, particularly in fine grained soil. The referenced groundwater levels should not be interpreted to represent permanent condition. Groundwater levels may fluctuate with precipitation, East Highline Canal water stage, site watering, drainage, and site grading (Landmark Consulting 2021).

The soils encountered at the points of exploration included saturated sands and silty sands that could liquefy during a Maximum Considered Earthquake. Liquefaction can occur within a three-foot thick sand layer at a depth of 26 feet below ground surface and two isolated silt and sand layers at depths of 15 and 42 feet. The likely triggering mechanism for liquefaction appears to be strong ground shaking associated with the rupture of the Rico and Imperial faults (Landmark Consulting 2021).

Liquefaction Induced Settlements. Based on empirical relationships, total induced settlements are estimated to be about ½ inch should liquefaction occur. Differential settlement is estimated at be two-thirds of the total potential settlement in accordance with *California Special Publication 117*. Accordingly, there is a potential for ⅓ inch of liquefaction induced differential settlement at the Project site. The differential settlement based on seismic settlements is estimated at 1 inch over a distance of 100 feet. Foundations should be designed for a maximum deflection of L/720. Because of the depth of the liquefiable layer, the 15 foot thick non-liquefiable layer may act as a bridge over the liquefiable layer resulting in a fairly uniform ground surface settlement; therefore, wide area subsidence of the soil overburden would be the expected effect of liquefaction rather than bearing capacity failure of the proposed structures (Landmark Consulting 2021).

Liquefaction Induced Ground Failure. Small ground fissure or sand boil formation is unlikely because of the thickness of the overlying unliquefiable soil. Sand boils are conical piles of sand derived from the upward flow of groundwater caused by excess porewater pressures created during strong ground shaking. Sand boils are not inherently damaging by themselves, but are an indication that liquefaction occurred at depth. Liquefaction induced lateral spreading is not expected to occur at this site due to the planar topography. If the liquefiable layer lies at a depth greater that about twice the height of a free face, lateral spread is not likely to develop. No slopes or free faces occur at this site except for the shallow retention basin, which depths are substantially above the first liquefiable layer (Landmark Consulting 2021).

a.4) Less Than Significant. The hazard of landsliding is unlikely due to the regional planar topography. No ancient landslides are shown on geologic maps of the region and no indications of landslides were observed during site investigations (Landmark Consulting 2021).

b) Potentially Significant Impact Unless Mitigation Incorporated. The Project would result in changes to the current topography because of grading and site preparation activities. Although these changes will be designed to

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)

meet stringent regulatory requirements, there is a potential for soil erosion, loss of topsoil, and geologic instability. The EIR will evaluate these potentially significant adverse impacts.

c) Potentially Significant Impact Unless Mitigation Incorporated. As discussed in a. 3 and 4, the proposed Project risk for on- or off-site landslide, lateral spreading, subsidence, or collapse are expected to be less than significant. However, the proposed Project risk for on- or off-site liquefaction are expected to be potentially significant unless mitigation is incorporated. These issues will be addressed in the EIR.

d) Less Than Significant Impact. Expansive soils are characterized by their ability to undergo significant volume change (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from rainfall, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors, and may cause unacceptable settlement or heave of structures, concrete slabs supported-on-grade, or pavements supported over these materials. Depending on the extent and location below finished subgrade, expansive soils can have a detrimental effect on structures. The near surface soils in the Project site are sands which are considered non-expansive. The EIR will evaluate the potential impacts related to expansive soils.

e) No Impact. A septic system and leach field are not proposed as part of the Project. No impacts are expected.

f) Less Than Significant Impact. Geologic mapping shows the surficial geology of the Project area consists of alluvial, lacustrine, and eolian deposits that date from recent times to the late Pleistocene. The Los Angeles County Museum (LACM) records search indicates the museum has a number of localities in similar sediments in the vicinity of the project area. A review of the scientific literature provided context for these and other fossil discoveries. Project activities would entail grading and trenching, which could impact sediments with high paleontological potential in the subsurface. Regulatory compliance and adherence to these measures will reduce impacts of the project on paleontological resources to a less-than-significant level as required by CEQA. Thus, potential impacts to paleontological resources would be less than significant.

VIII. GREENHOUSE GAS EMISSIONS.

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan or policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion:

a) Less Than Significant. Greenhouse gases (GHGs) emitted by human activity are implicated in global climate change or global warming. The principal GHGs are Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O), and Fluorinated Gases. The transportation sector (e.g., on-road motor vehicles, off-highway vehicles, aircraft) is the single largest source of GHG emissions and accounts for one-half of GHG emissions globally. With or without the implementation of the proposed mitigation measures, the Project's emissions from both short-term

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construction and long-term operation do not exceed the applicable ICAPCD thresholds of significance nor the SCAQMD GHG annual threshold of significance, thus the impacts to air quality are considered less than significant (SWCA 2021b). Construction emissions would not exceed the 3,000 MT CO2E annual threshold of significance. Therefore, the Project's direct and indirect GHG emissions would have a less than significant impact on the environment.

b) Less Than Significant. The Project would not conflict with any local or state plan, policy, or regulation aimed at reducing GHG emissions from land use and development. Thus, impacts would be less than significant.

IX. HAZARDS AND HAZARDOUS MATERIALS.

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the Project Area?	☐	☐	☒	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)

Discussion:

a) Less Than Significant Impact. The Project area is characterized as an agricultural and open desert area that is currently vacant. The proposed Project would require the limited transport, storage, and use of fuels, and other fluids for the fueling/servicing of construction equipment.

Transportation, storage, and disposal/recycling of such products are extensively regulated at the local, state and federal levels. Construction and operations will be required to be in compliance with these regulations. The hazardous materials handled onsite would be limited to small amounts of everyday use cleaners and common chemicals used for maintenance. The applicant will be required to comply with State laws and County Ordinance restrictions, which regulate and control hazardous materials handled on-site. Such hazardous waste would be transported off-site for disposal according to applicable State and County restrictions and laws governing the disposal of hazardous waste during construction and operation of the project. Disposal of hazardous wastes on the Project site is not proposed. However, these issues will be addressed in the EIR.

b) Less Than Significant Impact. Based on a search of the Government Code Section 65962.5 "Cortese" list, there are no hazardous materials sites listed on the Cortese Knox list. According to the State Water Resources Control Board, there are no Underground Storage Tanks in the vicinity of the landfill. This Phase I ESA revealed the following recognized environmental conditions (REC's) in connection with the property:

- There is a potential of buried asbestos concrete (transite) pipe existing onsite for irrigation water distribution piping. The pipe material is only considered "friable" when disturbed. The piping material is not required to be removed, but if disturbed, requires proper handling with respiratory protection and if removed should be properly disposed by a qualified ACM abatement contractor.

- Old tires, household debris and concrete debris piles are found in the western portion of the subject site. This debris should be cleaned up and properly disposed.

This assessment has revealed the following "de minimis" environmental conditions (REC's) in connection with the property:

- Pesticide residues (low concentrations) typical to agricultural crop applications are present in the near surface soils.

- Pole-mounted sealed electrical transformers owned and maintained by the Imperial Irrigation District (IID) exist on this subject property. All IID transformers containing PCB's have been replaced. If the transformers begin to leak, the IID should be notified, and the transformers replaced. (GS Lyon 2021).

c) No Impact. Construction of the proposed Project would not emit hazardous emissions, handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. The nearest school, Holtville Middle School, is located 6 miles west of the Project site. No impacts would occur, and this environmental parameter is not proposed for further analysis in the EIR.

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)

d) No Impact. Based on a search of the Government Code Section 65962.5 "Cortese" list, there are no hazardous materials sites listed on the Cortese Knox list. While no impacts are anticipated to occur, this environmental parameter will be further discussed in the EIR (GS Lyon 2021).

e) Less Than Significant Impact. The nearest airport to the Project site is the Holtville Airport located less than 2 miles north of the project site. The Holtville Airport consists of a long and wide runway, but it has essentially no other facilities. There are no hangars or other significant structures on the property. According to the *Imperial County Airport Land Use Commission (ALUC) Compatibility Plan* (Imperial County 1996), the Project parcels are outside the compatibility zones of the Holtville Airport. The Project site is approximately 1.4 miles south of the boundary line of Compatibility Zone C. Nonetheless, the EIR will determine whether the height of the any of the proposed components will require notification in accordance with Federal Aviation Administration (FAA) requirements.

f) Potentially Significant Impact Unless Mitigation Incorporated. Construction of the Project would generate construction trips and the potential for temporary roadway lane closures during construction of proposed traffic improvements, which could temporarily affect an emergency response or evacuation plan. This impact is considered potentially significant and will be addressed in the EIR.

g) Less than Significant. The Project site is located in the unincorporated area of Imperial County. According to the Seismic and Public Safety Element of the General Plan, the potential for a major fire in the unincorporated areas of the County is generally low (County of Imperial, n.d.). This is considered a less than significant impact and will be addressed in the EIR

X. HYDROLOGY AND WATER QUALITY.

Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☒	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner which would:				
1) Result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
2) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐

	Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	***No Impact*** **(NI)**
3) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional resources of polluted runoff; or	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	***No Impact*** (NI)

Discussion:

a) Potentially Significant Impact Unless Mitigation Incorporated. Construction of the Project facilities would involve excavation, soil stockpiling, grading, and the installation of solar arrays and access roads. There are multiple construction related activities that could have potential direct or indirect impacts on the water quality of local surface water features and shallow groundwater resources including; sedimentation, erosion, handling hazardous materials, and dewatering. Disturbing the geomorphic characteristics and stability of the channel bed and banks may initiate chronic erosion in natural and engineered channels thereby resulting in increased turbidity. A similar circumstance could occur upon decommissioning of the Project prior to site restoration. In both cases, such impacts could be exacerbated if surface vegetation is not reestablished and stabilized prior to the next high-flow or precipitation event and could result in significant direct impacts within the immediate vicinity of construction and indirect impacts on water quality further downstream. This is considered a significant impact.

Hazardous materials associated with construction would be limited to substances associated with mechanized equipment, such as gasoline and diesel fuels, engine oil, and hydraulic fluids. If precautions are not taken to contain contaminants, accidental spills of these substances during construction could produce contaminated stormwater runoff (nonpoint source pollution), a major contributor to the degradation of water quality in surface waters. Without proper containment and incident response measures in place, the operation of construction equipment could result in significant direct and indirect impacts on water quality. This is considered a significant impact.

Construction of the Project could, at times, also require dewatering of shallow, perched groundwater in the immediate vicinity of excavations and installation of underground features at a limited number of areas where groundwater depths are shallow. Groundwater withdrawn from the construction areas could be subsequently discharged to local drainage ditches or via land application. These discharges may contain sediments, dissolved solids, salts, and other water quality constituents found in the shallow groundwater, which could degrade the quality of receiving waters. Degradation of local receiving waters from the introduction of shallow groundwater during construction dewatering could result in a significant impact on receiving waters. This is considered a significant impact.

Post-construction runoff from the constructed facilities would carry two main water quality impacts that could impact surface water drainages and drains. The first is caused by an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over developed surfaces, water can entrain a variety of potential pollutants including, but not limited to, oil and grease, pesticides, trace metals, and nutrients. These pollutants can become suspended in runoff and carried to receiving waters. These effects are commonly referred to as non-point source water quality impacts.

Long-term operation of the solar facility poses a limited threat to surface water quality after the completion of construction. The Project would be subject to the County's Grading Regulations as specified in Section 91010.02 of the Ordinance Code. However, since the Project site is located in unincorporated Imperial County and not subject to a Municipal Separate Storm Sewer System (MS4) or National Pollutant Discharge Elimination System (NPDES) General Industrial Permit, there is no regulatory mechanism in place to address post construction water quality concerns. Based on this consideration, the Project has the potential to result in both direct and indirect

water quality impacts that could be significant. Long-term point discharges from the Project would be minimal; however, reductions in water quality could occur where the water released is of lower quality than ambient conditions. These discharges would be infrequent, but could include landscape irrigation, uncontaminated pumped ground water, and discharges of potable water during water tank cleaning [as defined in 40 CFR 35.2005(21)]. In this context, long-term water quality impacts from point sources would be less than significant.

The second potential impact from post-construction runoff is a potential increase in the quantity of water delivered to adjacent or nearby water bodies during storms, referred to as hydromodification. Increased impervious surfaces from surfaces such as asphalt, concrete, and other compacted surfaces can interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, large volumes of water runoff collects and is routed to drainage systems where it is discharged to the nearest receiving water. This process can contribute to stream bank scouring and downstream flooding, resulting in impacts on aquatic life and damage property. For these reasons, the Project could result in on- and off-site discharges that could indirectly impact downstream surface waters by increasing drain scour and/or sedimentation. Therefore, this indirect impact is considered significant.

b) Less than Significant. Groundwater recharge in the area will not be significantly affected because of the fact that the majority of the Project site will feature a pervious landscape in both the existing and proposed conditions. Retention basins will also provide infiltration and groundwater recharge. During the construction phase, a significant amount of construction dewatering is not expected to be required. Potential construction that may require dewatering includes footings and foundations for the Project substation and overhead collection system poles. Dewatering associated with these portions of construction will be localized to transmission pole locations or the substation and will not result in a significant decrease in production rates of existing or planned wells. In the post construction condition, no pumping of groundwater is anticipated. Groundwater at/near the Project site is not used for beneficial uses, such as municipal, domestic, or industrial supply. Water needs would be provided by adjacent Imperial Irrigation District (IID) Canals and are expected to be much less than the needs of the existing agricultural land. As a result, no significant impacts on groundwater levels are expected. Potential impacts to groundwater resources are expected to be less than significant and will be addressed in the EIR.

c.1), c.2) and c.3) Less Than Significant Impact. The proposed drainage patterns and general drainage system would be similar to the existing site conditions. Drainage from the construction zone would be routed to the detention basins for detention and infiltration. The remainder of the site would follow existing drainage patterns with storm flows conveyed toward existing IID Drains. Because of the postponement of agricultural irrigation during the life of the Project, it is anticipated that the annual runoff from the project site would decrease when compared to the existing condition, which is similar to when agricultural fields are fallowed and/or abandoned. Therefore, the proposed Project would result in no significant impacts associated with the alteration of drainage patterns resulting in substantial erosion or siltation on or off site.

Existing drainage patterns would not be substantially altered because of the proposed Project. The majority of the site would sheet flow through the pervious native soils, toward the shallow ponding areas. Peak flow runoff from the Project would be collected in shallow ponding areas. The Project facilities would be designed in anticipation of this ponding, and there is no potential for increased flooding onsite or in offsite IID drains. Because of the use of infiltration, it is anticipated that the annual runoff from the Project site would decrease when compared to the existing condition. The Project will be designed to meet County of Imperial storage requirements for storm water

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	***No Impact*** **(NI)**

runoff, which will result in an impoundment of runoff in excess of the anticipated volume of runoff to be generated by the 100-year storm event. Therefore, the proposed Project would result in no significant impacts associated with the alteration of drainage patterns resulting in on- or off-site flooding.

Under proposed conditions, the existing drainage characteristics of the Project site would remain substantially the same. To retain the total volume of a 3-inch precipitation covering the solar energy facility site with no reduction from infiltration, storm water retention basins would be constructed on the solar energy facility site. Because of the implementation of infiltration, it is anticipated that the annual runoff from the Project site would decrease when compared to the existing condition. Therefore, the proposed project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. This is considered a less than significant impact.

d) Less Than Significant Impact. In recognition of the Project site's inland location, the threat of tsunamis or seiche originating from the Salton Sea is considered negligible. The topography within the vicinity of Project site is generally level and, therefore, the hazard of mudflows adversely affecting the Project facilities is very low. For this reason, no significant impact would occur.

e) Less than Significant. The Project area is located within the Colorado River Hydrologic Region, which includes the lower Colorado River system; the Salton Sea drainage system; and several internal basins. The Project site lies within the Salton Sea watershed southeastern portion of the irrigated portion of the Imperial Valley. Imperial County is a desert region with less than six inches of rainfall per year, but rainfall can be concentrated and lead to flooding. Most of the surface-water supplies in the area are a result of irrigation from the Colorado River. The water is diverted from the Colorado River at the Palo Verde Weir north of Blythe by the Palo Verde Irrigation District for use in the Palo Verde Valley of northeast Imperial County and southeast Riverside County; and at the Imperial Dam into the All-American Canal by the IID and the Bard Irrigation District for use in the Imperial, Yuma, Bard, and Coachella Valleys. The IID manages over 3,000 miles of canals and drains in the area and is the largest irrigation district in the United States. Since 1942, the area has received its water through the All-American Canal, which runs 82 miles from the Imperial Dam on the Colorado River west to agricultural areas and cities in the Imperial Valley. The 82-mile All-American Canal has several main canals that branch off, including the Westside Main canal. These three canals supply water service to Imperial Valley and are operated and maintained by IID. The IID serves irrigation water and electric power to farmers and residents in the lower southeastern portion of California's desert.

The EIR will identify regional and local hydrology and summarize federal, state, and local laws, policies, and regulations that are applicable to the Project.

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)
XI. LAND USE AND PLANNING.				
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Discussion:

a) No Impact. The Project site is located in a sparsely populated, agriculturally zoned portion of eastern Imperial County. The Project site is surrounded by agricultural lands to the west and open desert to the north, south, and east. There are no established residential communities located within or in the vicinity of the Project site. Construction of the Project would not divide an established community; no impact would occur, and this environmental parameter is not proposed for further analysis in the EIR.

b) No Impact. Project parcels 050-070-019 and -018 are both zoned A-2-RE (General Agriculture with Renewable Energy Overlay) and parcel 050-070-021 is zoned GS-RE (Government/Special Public Zone with Renewable Energy Overlay). All parcels are located within the Renewable Energy Overlay Zone. Project parcels 050-070-019 and -018 are both designated by the General Plan as Agriculture and parcel 050-070-021 is Recreation. The current land use is idle land and agriculture. The Project would not conflict with any applicable land use plan, policy, or regulation. There are no adopted habitat conservation plans or natural community conservation plans encompassing the Project site therefore there is no potential for the Project to conduct with any habitat conservation plan or natural community conservation plans. The EIR will evaluate the existing and proposed land uses, land use designations and zone classifications within the Project site and the surrounding area to identify the proposed Project's consistency with the goals, objectives, policies and programs of each General Plan Element. The proposed Project's compatibility with relevant goals, policies, and programs of the General Plan will be presented in a General Plan Consistency Analysis (included as an Appendix to the EIR) and in each resource section of the EIR.

XII. MINERAL RESOURCES.				
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☒	☐

Discussion:

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	***No Impact*** **(NI)**

a, b) Less Than Significant Impact. According to Figure 8: Imperial County Existing Mineral Resources of the Conservation and Open Space Element of the General Plan (County of Imperial 2016), the Project site appears to be near sand and gravel, construction mines. Given this information, the EIR will evaluate whether the Project would result in the loss of availability of a known mineral resource.

XIII. NOISE.

Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion:

a and b) Less Than Significant Impact. There are no sensitive receptors within one mile of the Project site. Construction would be performed in discrete steps, each of which has its own mix of equipment, and consequently its own noise characteristics. These various sequential phases would change the character of the noise generated on site. Therefore, the noise levels vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase.

Construction of the proposed Project would require the use of earthmovers, bulldozers, loaders, scrapers, cranes, forklifts, pile drivers, water trucks, and pickup trucks. This equipment would be used on the Project site. The maximum noise level generated by each earthmover on the Project site is assumed to be 88 dBA Lmax at 50 feet from the earthmover. Each bulldozer would also generate 88 dBA Lmax at 50 feet. The maximum noise level generated by water and pickup trucks is approximately 86 dBA Lmax at 50 feet from these vehicles. While full sized pile drivers can generate noise levels in excess of 96 dBA Lmax, the post driver required for the solar panel mounts would generate noise levels of 85 to 88 dBA Lmax. Each doubling of a sound source with equal strength increases the noise level by 3 dBA. As each piece of construction equipment operates as an independent noise source, the combined noise level during construction would be 91 dBA Lmax at a distance of 50 feet.

The variation in power and usage of the various equipment types creates complexity in characterizing construction noise levels. The estimated composite site noise level is based on the assumption that all equipment would operate at a given usage load factor, for a given hour (i.e., front end loaders are assumed to be used for up to 40 percent of 1 hour, or 24 minutes), to calculate the composite average daytime hourly Leq. Using a conservative load factor of 40 percent for all on-site equipment, the average noise level at the existing residence would be 73

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)

dBA Leq. This noise level would not exceed the County's 75 dBA Leq construction noise threshold. Furthermore, the project must comply with County standards regarding construction hours (i.e., construction limited to normal weekday working hours, 7 a.m. to 7 p.m., Monday through Friday). Therefore, impacts from construction noise are considered less than significant.

Traffic noise associated with construction of the proposed Project is not anticipated to be a significant source of noise. Traffic noise is not greatly influenced by lower levels of traffic, such as those associated with the proposed Project's construction effort. For example, traffic levels would have to double in order for traffic noise on area roadways to increase by 3 dBA. The proposed Project's construction traffic on area roadways would increase hourly traffic volumes by much less than double; therefore, impacts from traffic noise are considered less than significant.

c) No Impact. The proposed Project is located within the vicinity of the Holtville Airport, which is located two (2) miles north of the Project site. According to the *Imperial County Airport Land Use Commission (ALUC) Compatibility Plan* (Imperial County, 1996), the project parcels are outside the compatibility zones of the Holtville Airport. The Project site is approximately 1.4 miles south of the boundary line of Compatibility Zone C. As discussed above the noise level would not exceed the County's 75 dBA Leq construction noise threshold. Furthermore, the Project must comply with County standards regarding construction hours (i.e., construction limited to normal weekday working hours, 7 a.m. to 7 p.m., Monday through Friday). Therefore, impacts from construction noise are considered less than significant. For these reasons, the Project would not expose people residing or working in the area to excessive noise levels; therefore, no impact would occur, and this environmental parameter is not proposed for further analysis in the EIR.

XIV. POPULATION AND HOUSING.

Would the project:

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of road or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion:

a) No Impact. The Project would not result in any full-time employees on the site at the conclusion of construction. Thus, there would be no unplanned population growth in the Project vicinity. There would be no impact and this environmental parameter is not proposed for further analysis in the EIR.

b) No Impact. There are no year-round residents within the Project area. The proposed Project would not result in the displacement of any residents. There would be no impact and this environmental parameter is not proposed for further analysis in the EIR.

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)

XV. PUBLIC SERVICES.

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any public services:

Fire protection?	☐	☒	☐	☐
Police protection?	☐	☒	☐	☐
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Discussion:

Fire and Police) Potentially Significant Impact Unless Mitigation Incorporated. Fire protection services are provided to the Project area by the County of Imperial Fire Department through the Holtville Fire Department Station, located in the City of Holtville approximately 6.5 miles to the west.

The County of Imperial Sheriff's Department provides law enforcement to the Project area. Sheriff's officers that patrol the project area are based at the Holtville Police Department in the City of Holtville located approximately 6.5 miles west of the Project area.

The County of Imperial has a Development Impact Fee (DIF) which is authorized by County of Imperial Ordinance No. 4.32. This fee is applied to all development projects in incorporated and unincorporated County of Imperial land. Payment of the DIF is required of developers to fund public facilities such as fire protection facilities and sheriff facilities. When the Project is constructed, DIF fees will be required to ensure that resources will be available for capital improvements to implement the County's capital and operational funding of future facilities. Potential impacts on fire and police services could be potentially significant and will be evaluated in the EIR.

Schools, Parks, and Other Public Facilities) No Impact. Construction of the Project would not include the provision of, or the need for, new schools, parks or other public facilities. The Project would not result in new long-term housing. There would not be a permanent increase in the population. Because the Project would not result in a substantial increase in population, it does not require additional schools, parks, or other public facilities beyond that which already exists. No physical impacts related to the provision of schools, parks, or other facilities would occur and this environmental parameter is not proposed for further analysis in the EIR.

XVI. RECREATION.

Would the project:

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of	☐	☐	☐	☒

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)
recreational facilities, which have an adverse physical effect on the environment?				

Discussion:

a, and b) No Impact. There are no existing neighborhood or regional parks within the Project area. The proposed Project would not result in an increase in the population of the area. There would be no impact to recreation and this environmental parameter is not proposed for further analysis in the EIR.

XVII. TRANSPORTATION / TRAFFIC.

Would the project:

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the Project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☒	☐	☐	☐

Discussion:

a) Less than Significant. Construction of the Project is anticipated to be consistent with the County of Imperial General Plan and is not anticipated to conflict with a program, plan, ordinance or policy addressing roadway, transit, bicycle or pedestrian facilities. Construction of the Project would temporarily increase the number of vehicle trips in the area and the number of on-site personnel. However, these increases are not expected to be substantial. Project conflicts with applicable programs, plans, ordinance or policies addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities will also be addressed in the EIR.

b) Less Than Significant. A transportation impact analysis (TIA) was prepared to determine and evaluate traffic impacts on the local circulation system due to construction of the Project. construction traffic would not result in congestion and excessive delays at study intersections and roadways. In compliance with Senate Bill 743 (SB 743) and CEQA Section 15064.3b, the TIA included an assessment of Project-related changes in vehicle miles traveled (VMT) compared to existing conditions. The Office of Planning and Research (OPR) provides screening criteria that allow small projects (from a traffic standpoint) to screen out of a detailed VMT analysis based on the number of daily trips it generates. Projects that generate fewer than 110 trips per day can be presumed to result in less than significant VMT impacts.

The proposed Project would be remotely controlled. No employees would be based at the Project site. Security related monitoring would be done remotely. Personnel may conduct unscheduled security rounds, and

maintenance workers may access the site periodically to clean the panels and maintain the equipment and project area. The public would not have access to the facility. Thus, the Project will not generate more than 110 trips per day. Therefore, the Project meets the small project screening criteria, and it will not have significant VMT impact (Kittleson and Associates, 2021).

c) Less Than Significant Impact. The Project site would include one primary access driveway, currently contemplated on Nelson Pit Road, bisecting the Project area and a secondary access driveway (if required) with a location that is yet to be determined. This driveway would be provided with a minimum of 30-foot double swing gates with a "Knox Box" for keyed entry. Internal to the Project site, up to 30-foot-wide roads would be provided between the crystalline solar photovoltaic arrays, as well as around the perimeter of each Project site inside the perimeter security fence to provide access to all areas of each site for maintenance and emergency vehicles. Design features that would result in transportation-related hazards or safety concerns are not anticipated (Kittleson and Associates, 2021).

d) Potentially Significant. Construction of the Project would generate construction trips and the potential for temporary roadway lane closures exists. It is anticipated that emergency access would be maintained at all times, and appropriate detours would be provided, as necessary. Nonetheless, impacts related to emergency access are considered potentially significant and will be addressed in the EIR.

XVIII. TRIBAL CULTURAL RESOURCES.

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☒	☐	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☒	☐	☐	☐

Discussion:

a) and b) Potentially Significant. In compliance with Assembly Bill 52 (Chapter 532, Statutes 2014), the ICPDSD sent letters to one (1) California Native American Tribe on March 26, 2021, providing notification of the Project and an invitation to participate in consultation. Under AB-52, California Native American Tribes have 30 days from the date of receipt of the notice to request consultation. On April 8, the Quechan Tribe Historic Preservation Officer

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)

requested consultation with the County. Results of any Native American consultation will be included in the EIR. As discussed under Response to Item V. Cultural Resources, implementation of the Specific Plan could have potentially significant impacts to archaeological resources, which could be considered a significant resource to a California Native American tribe.

XIX. UTILITIES AND SERVICE SYSTEMS.

Would the project:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☒	☐	☐
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion:

a) Less Than Significant Impact. Water would be picked up from a nearby lateral canal and delivered to the construction location by a water truck which would be capable of carrying approximately 4,000 gallons per load. It is estimated that up to 275 acre-feet of water would be needed for site grading and dust control over the expected Project construction period. Potable drinking water will be obtained for the duration of the Project from a state-approved provider. Therefore, the proposed Project would not require or result in the construction of new water treatment facilities or expansion of existing facilities. This is considered a less than significant impact.

b) Potentially Significant Impact Unless Mitigation Incorporated. Construction

As described in Chapter 3, Project Description, construction of the Project would take up to 11 months. Water will be needed during construction for dust control and site grading. Water would be picked up from a nearby lateral

canal and delivered to the construction location by a water truck which would be capable of carrying approximately 4,000 gallons per load. It is estimated that up to 275 acre-feet of water would be needed for site grading and dust control over the expected Project construction period. The actual amount of water that will also be brought on site will vary depending on site conditions such as wind speed, direction, and the amount and timing of rainfall.

Operations and Maintenance

Panel washing and operational water required for O&M of the project will be provided by IID. Up to three 10,000 gallon fire water tanks would be constructed across the solar energy facility site and kept filled during operations for on-site fire protection. Water will also be used for periodic cleaning of the solar PV panels. It is anticipated that the solar PV panels will be washed up to two times per year to ensure optimum solar absorption by removing dust particles and other buildup. Water for washing the PV modules, if required, would be purchased from the IID and delivered to the project site by water trucks. The volume of water to be used for PV module washing and dust control, if needed, is estimated at up to 10 acre-feet per year.

Decommissioning

Water may also be required during decommissioning of the Project and site restoration at the end of the Project's life. Total water demand during decommissioning is estimated to be 50 AF.

Total and Annual Water Demand

A Water Supply Assessment would be prepared in accordance with SB-610. The Water Supply Assessment would determine the anticipated water demand for construction, operation, and decommissioning of the Project.

c, d, and e) No Impact. Impacts with regards to solid waste disposal and policies and wastewater treatment would be less than significant. Therefore, these issue areas will not be discussed further. Impacts associated with water quality will be addressed in the EIR under the Hydrology/Water Quality section.

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)
XX. WILDFIRE.				
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

Discussion:

a) No Impact. According to the Draft Fire Hazard Severity Zone Map for Imperial County prepared by the California Department of Forestry and Fire Protection, the Project area is not located in or near state responsibility areas or lands classified as very high hazard severity zones (California Department of Forestry and Fire Protection 2007). As noted under Hazards and Hazardous Materials (Response IX. f) the proposed project would not substantially impair an adopted emergency response plan or emergency evacuation plan. No impact is identified for this issue area and this environmental parameter is not proposed for further analysis in the EIR.

b) No Impact. The Project area is not located in or near state responsibility areas or lands classified as very high hazard severity zones (California Department of Forestry and Fire Protection 2007). Therefore, the proposed Project would not exacerbate wildfire risks. No impact is identified for this issue area and this environmental parameter is not proposed for further analysis in the EIR.

c) No Impact. The Project site is not located in or near state responsibility areas or lands classified as very high hazard severity zones (California Department of Forestry and Fire Protection 2007). The proposed Project would not require the installation or maintenance of associated infrastructure that may exacerbate fire risk or that would result in temporary or ongoing impacts to the environment. No impact is identified for this issue area and this environmental parameter is not proposed for further analysis in the EIR.

d) Less than Significant. The Project site is not located in or near state responsibility areas or lands classified as very high hazard severity zones (California Department of Forestry and Fire Protection 2007). The proposed Project would not expose people or structures to significant risks, including downslope or downstream flooding or

	Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	***No Impact*** **(NI)**

landslides, as a result of runoff, post-fire slope instability, or drainage changes. No impact is identified for this issue area and this environmental parameter is not proposed for further analysis in the EIR.

Note: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; Sundstrom v. County of Mendocino, (1988) 202 Cal.App.3d 296; Leonoff v. Monterey Board of Supervisors, (1990) 222 Cal.App.3d 1337; Eureka Citizens for Responsible Govt. v. City of Eureka (2007) 147 Cal.App.4th 357; Protect the Historic Amador Waterways v. Amador Water Agency (2004) 116 Cal.App.4th at 1109; San Franciscans Upholding the Downtown Plan v. City and County of San Francisco (2002) 102 Cal.App.4th 656.

Revised 2009- CEQA
Revised 2011- ICPDS
Revised 2016 – ICPDS
Revised 2017 – ICPDS
Revised 2019 – CEQA

SECTION III. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	*No Impact* (NI)
The following are Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current project, and the effects of probable future projects.)	☒	☐	☐	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Discussion:

a) Potentially Significant Impact. The EIR's biological resources section will discuss direct and indirect impacts on plants and wildlife species. The EIR will also evaluate direct and indirect impacts on cultural and tribal cultural resources. Finally, the EIR will evaluate the Project's contribution to cumulative impacts, identify whether the contribution is cumulatively considerable, and propose feasible mitigation, as appropriate, to reduce such impacts to less-than-significant levels.

b) Potentially Significant Impact. The Project has the potential to contribute to cumulative impacts related to air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, transportation and traffic, tribal cultural resources, and utilities and service systems. The EIR will evaluate the project's contribution to cumulative impacts in these areas as well as other areas as further impacts are identified.

c) Less Significant Impact. The Project could potentially result in environmental effects that have adverse impacts on human beings, either directly or indirectly. These impacts will be fully addressed in the EIR.

SECTION IV. PERSONS & ORGANIZATIONS CONSULTED/ REFERENCES

A. COUNTY OF IMPERIAL

- Jim Minnick, Director of Planning & Development Services
- Michael Abraham, AICP, Asst. Director of Planning & Development Services
- Diana Robinson, Planner III
- Mariella Mariela Moran, Planner II
- Imperial County Air Pollution Control District
- Department of Public Works
- Fire Department
- Agricultural Commissioner
- Environmental Health Services
- Sheriff's Office

B. OTHER AGENCIES/ORGANIZATIONS

- CDFW
- IID
- USFWS
- RWQCB
- SWRCB

C. REFERENCES

California Department of Fish and Wildlife. 2015. Inland Deserts Region Imperial Wildlife Area, Imperial County. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=87823&inline. Accessed December 2020. California Department of Forestry and Fire Protection, 2007. Fire Hazards and Severity Zones Map, Imperial County.

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California Dept. of Conservation, 2018. Imperial County Farmland and Monitoring Program (FMMP) Imperial County Important Farmland 2018. Available at: (https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed April 15, 2021.

County of Imperial, 1996. Imperial County Airport Land Use Commission Compatibility Plan.

County of Imperial, 2016. Final Conservation and Open Space Element of the Imperial County General Plan. Adopted by the Imperial County Board of Supervisors, March 8, 2016. Available at: http://www.icpds.com/CMS/Media/Conservation-&-Open-Space-Element-2016.pdf.

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Kittleson and Associates, 2021. Viking Solar Energy Storage Project Transportation Study. January 29.

Landmark Consulting, 2021. Geotechnical Report. January.

SWCA 2020a. California Land Evaluation and Site Assessment for the Viking Solar Energy Project, Imperial County, California. December.

SWCA 2021a. Visual Resource Assessment for the Vikings Solar Energy Storage Project. January.

SWCA 2021b. Air Quality Technical Report Vikings Solar Energy Storage Project Imperial County, California. February.

SWCA 2021c. Biological Resources Technical Report Vikings Solar Energy Storage Project Imperial County, California. January.

SWCA 2021d.Aquatic Resources Technical Report Vikings Solar Energy Storage Project Imperial County, California. January.

SWCA 2021e.Cultural Resources Technical Report Vikings Solar Energy Storage Project Imperial County, California. January.

U.S. Bureau of Land Management (BLM). 2020. BLM Recreation Web Map. Available at: https://www.blm.gov/visit/imperial-sand-dunes. Accessed April 2021.

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Kimberly Noriega

From: Quechan Historic Preservation Officer <historicpreservation@quechantribe.com>
Sent: Thursday, April 8, 2021 8:48 AM
To: Kimberly Noriega
Cc: ICPDSCommentLetters
Subject: FW: CUP20-0025 AB52 Letter

This email serves as notification that the Quechan Tribe HPO is requesting consultation on this project.

From: Quechan Historic Preservation Officer [mailto:historicpreservation@quechantribe.com]
Sent: Thursday, April 08, 2021 8:33 AM
To: 'Quechan Historic Preservation '
Cc: icpdscommentletters@co.imperial.ca.us
Subject: RE: CUP20-0025 AB52 Letter

This email serves as notification that the Quechan Tribe HPO is requesting consultation on this project.

From: Quechan Historic Preservation [mailto:historicpreservation@quechantribe.com]
Sent: Thursday, April 01, 2021 10:42 AM
To: historicpreservation@quechantribe.com
Subject: FW: CUP20-0025 AB52 Letter

From: Kimberly Noriega [mailto:KimberlyNoriega@co.imperial.ca.us]
Sent: Friday, March 26, 2021 2:23 PM
To: Quechan Indian Tribe ; Quechan Historic Preservation Officer
Cc: Michael Abraham; Diana Robinson; Carina Gomez; Gabriela Robb; John Robb; Maria Scoville; Rosa Soto; Valerie Grijalva
Subject: CUP20-0025 AB52 Letter

Good morning,

Please find attached CUP20-0025 letter for formal notification of determination and notification of consultation opportunity.

Kind Regards,

Kimberly Noriega

Office Assistant III

Imperial County
Planning and Development Services

801 Main St.
El Centro, CA 92243
☎ **Phone:** (442) 265-1736
☎ **Fax:** (442) 265-1735

Office of the
Agricultural Commissioner
Sealer of Weights and Measures

Carlos Ortiz
Agricultural Commissioner
Sealer of Weights & Measures

Jolene Dessert
Asst. Agricultural Commissioner
Asst. Sealer of Weights & Measures

April 7, 2021

Diana Robinson, Planner III
I.C. Planning & Development Services Department
801 Main Street
El Centro, CA 92243

Re: CUP#20-0025 Vikings Solar Energy and Storage Project

Dear Ms. Robinson,

Our department received and reviewed documents pertaining to Conditional Use Permit #20-0025 for Vikings Solar Energy & Storage Project. The applicant proposes to construct a solar development project which includes solar energy generation and battery storage at 2910 & 3000 E. Nelsons Pit Road, Holtville, CA consisting of approximately 603.61 acres currently zone for A-2-RE agriculture and GS-RE recreation/open space; APN 050-070-018, -019, & -021.

The California Department of Conservation has classified farm ground for this project to be Farmland of Statewide Importance. This farmland can support crops that contribute directly to the County's gross agricultural production value. Mitigation for the loss of this farmland is needed, as the removal of any farmland out of production will have a negative effect on direct, indirect, and induced employment; income; sales; and tax revenue.

Any plans to mitigate farmland taken out of production through the use of easements must ensure that the mitigating farm ground is in farmable conditions. If the mitigation plan involves a Parceling Project, any parcels to remain in farming must align with existing infrastructure such as canals, delivery ditches, and surface & subsurface drainage systems. Mitigating farmland must be maintained in farmable condition, including repairs as needed to the infrastructure.

This project will require an ongoing Pest Management Plan to mitigate negative impacts to surrounding farmland from pests such as insects, vertebrates, weeds, and plant pathogens. The plan must be submitted to our office for approval prior to construction. Attached are the requirements that your company will need to meet.

Projects constructed on farm ground will also require a reclamation plan that would return the land to tis pre-constructed agricultural condition at the conclusion or abandonment of the project. The reclamation plan needs to include a written description of the crop history of each field, water delivery system, drainage system, physical infrastructure, the parties responsible for conducting reclamation, and a detailed description of the recycling, and/or disposal of all solar arrays, inverters, transformers, and other structures on each of these sites. The plan must be submitted to our office for approval.

If you or the applicant has any question, please contact me at 442-265-1500.

Respectfully,

Carlos Ortiz
Agricultural Commissioner

Office of the
Agricultural Commissioner
Sealer of Weights and Measures

Carlos Ortiz
Agricultural Commissioner
Sealer of Weights & Measures

Jolene Dessert
Asst. Agricultural Commissioner
Asst. Sealer of Weights & Measures

Pest Management Plan Requirements for Solar Projects

The Project Shall:

- Maintain a Pest Management Plan until reclamation is complete.
- Develop and implement a Pest Management Plan that will reduce negative impacts to surrounding (not necessarily adjacent) farmland.
- Monitor for all pests including insects, vertebrates, weeds, and pathogens. Promptly control or eradicate pests when found, or when notified by the Agricultural Commissioner's office that a pest problem is present on the project site. The assistance of a licensed pest control advisor is recommended. All treatments must be performed by a qualified applicator or a licensed pest control business.
- "Control" means to reduce the population of common pests below economically damaging levels, and includes attempts to exclude pests before infestation, and effective control methods after infestation. Effective control methods may include physical/mechanical removal, biocontrol, cultural control, or chemical treatments.
- Use of "permanent" soil sterilants to control weeds or other pests is prohibited due to the fact that this would interfere with reclamation.
- Notify the Agricultural Commissioner's office immediately regarding any suspected exotic/invasive pest species as defined by the California Department of Food Agriculture (CDFA) and the United States Department of Agriculture (USDA). Request a sample be taken by the Agricultural Commissioner's Office of a suspected invasive species. Eradication of exotic pests will be done under the direction of the Agricultural Commissioner's Office and/or CDFA.
- Obey all pesticide use laws, regulations, and permit conditions.
- Allow access by Agricultural Commissioner staff for routine visual and trap pest surveys, compliance inspections, eradication of exotic pests, and other official duties.
- Ensure that all project employees that handle pest control issues are appropriately trained and certified, that all required records are maintained and available for inspection, and that all permits and other required legal documents are current.
- Maintain records of pests found and treatments or pest management methods used. Records should include the date, location/block, project name (current and previous if changed), and methods used. For pesticides include the chemical(s) used, EPA Registration numbers, application rates, etc. A pesticide use report may be used for this.
- Submit a report of monitoring, pest finds, and treatments, or other pest management methods to the Agricultural Commissioner quarterly within 15 days after the end of the previous quarter, and upon request. The report is required even if no pests were found or treatment occurred. It may consist of a copy of all records for the previous quarter, or may be a summary letter/report as long as the original detailed records are available upon request.

Reimbursement

- The project shall reimburse the Agricultural Commissioner's office for the actual cost of investigations, inspections, or other required non-routine responses to the site that are not funded by other sources.

(442) 265-1500 • fax: (760) 353-9420 | 852 Broadway Street, El Centro, CA 92243
agcom@co.imperial.ca.us | agcom.imperialcounty.org

150 SOUTH NINTH STREET
EL CENTRO, CA 92243-2850

TELEPHONE: (442) 265-1800
FAX: (442) 265-1799

AIR POLLUTION CONTROL DISTRICT

April 8, 2021

Mr. Jim Minnick
Planning Director
801 Main Street
El Centro, CA 92243

SUBJECT: Conditional Use Permit (CUP) 20-0025 for the Vikings Solar Energy and Storage Project by the Vikings Energy Farm, LLC

Dear Mr. Minnick,

The request for review and comments concerning the information regarding the preparation of an Environmental Impact Report (EIR) for the CUP 20-0025 Vikings Solar Energy and Storage Project has been reviewed by the Imperial County Air Pollution Control District (Air District). As you know, the Air District's established programs help to keep the quality of air in Imperial County from declining. The programs, Rules and Regulations of the Air District in conjunction with the California Environmental Quality Act (CEQA), the most current CEQA Air Quality Handbook for Imperial County (CEQA Handbook), the Air Districts State Implementation Plans (SIP's) for Ozone, $PM_{2.5}$ and PM_{10} work together to assure that air quality improves or does no degrade. Currently, the non-attainment status of "moderate" for ozone, "moderate" for $PM_{2.5}$ and the maintenance requirements for PM_{10} are the driving criteria in establishing the thresholds for NOx, ROG, PM_{10}, SOx and CO found in the CEQA Handbook. These thresholds and their significance are explained under Section 6 of the CEQA handbook, which describes the preparation of an Air Quality Analysis for an Environmental Impact Report (EIR) for nonrenewable projects.

However, when exploring the impacts of renewable projects, it is a common misconception that these types of projects are not a significant source of air pollution. While it is true that renewable projects, that do not employ fuel based combustion units as supplemental power, are typically cleaner projects during their operational phases, in most cases construction and cumulative impacts have the potential to cause adverse air quality impacts. Specifically, PM_{10} and NO_x emissions are the primary pollutants of concern during the construction and operational phases of these types of renewable projects. Historical experience has demonstrated that shortened construction periods not previously analyzed during the CEQA process, creates a potential for elevated levels of NO_x emissions, as well as elevated levels of PM_{10} during earthmoving activities.

Therefore, a **Tier I Preliminary Analysis** should be performed in order to assess the level of significance of potential impacts. This analysis should include an overview containing a complete description of the project in its current existing conditions, what the proposed development will be, how that will change the existing conditions, and should also provide answers to the questions in the **White Paper**. These questions are designed to assess the project's level of significance before and after proposed mitigation, (White paper attached for your reference). Additionally, in order to identify NO_x emissions created during the construction phase of the renewable project, a **Construction Equipment List** detailing the equipment type, make, model, year, horsepower, hours of **daily** operation, date arrived onsite, and date removed from site should be provided to the Air District in Excel format.[1] This is to ensure NO_x emissions during the construction period remained under the CEQA thresholds of significance.

With regards to the battery storage portion. All designs will ultimate need to disclose the type of battery, its purpose and if any backup power source will be used during down times, if applicable.

In regards to cumulative impacts, which occur during the operational phase of renewable projects, PM_{10} is of main concern. Therefore, an **Operational Dust Control Plan (ODCP)** is required detailing how dust emissions will be controlled and maintained during the operational phase of the project.[2] An initial site visit is required to confirm the elements of any draft ODCP before it can be finalized by the Air District. After this, continual site visits will typically occur on a yearly basis. Please note that an ODCP is intended to provide pertinent information specific to your operation for the reduction of fugitive dust emissions created by the ongoing operations at your facility.

Additionally, compliance with Regulation VIII is required for all construction activities, as well as notification 10 days prior to the commencement of all construction activities. Our rules and regulations can be found on our website at www.co.imperial.ca.us/AirPollution under the planning section. If any questions arise, please feel free to contact our office at (442) 265-1800.

Respectfully,

Monica N. Soucier
APC Division Manager

[1] The Equipment List submittal will require a written commitment by the applicant to a submittal schedule agreed upon between the applicant and the Air District

[2] The ODCP needs to be approved prior to the issuance of the Certificate of Occupancy.

WHITE PAPER – GENERAL INSTRUCTIONS March 7, 2012
USE OF CALEEMOD IS STRONGLY RECOMMENDED

Section X – Environmental Impacts and Mitigation Measures

X.1 Analysis Methodology

Explanation Paragraph:

Table XX – Anticipated Construction Schedule

Phase	Year											
	Month											
Grading												
Trenching												
Solar Panel Install												
Substation												
O&M Construction												
Parking Lot												

X.2 Analysis of Environmental Impacts

Impact 1: Would the project conflict with or obstruct implementation of the applicable air quality plan?

Impact Analysis:

a) Ozone Air Quality Management Plan (AQMP):

b) PM10 State Implementation Plan (PM10 SIP):

Level of Significance Before Mitigation:

Mitigation Measures:

Level of Significance After Mitigation:

Impact 2: Would the Project violate any air quality standard or contribute substantially to an existing or projected quality violation?

Impact Analysis:

Level of Significance Before Mitigation:

Mitigation Measures:

Level of Significance After Mitigation:

Impact 3: Would the Project Result in Construction-related air quality impacts?

Impact Analysis: Short- term impacts will occur during grading, trenching, installation, and contruction activities associated with the proposed project. The project can be devided in to distinct activities that will be performed according to the anticipated construction schedule provided in table 2. Descriptions of these separate activities are provided below:

- ie: Grading:
- ie: Trenching:

Table XX – Anticipated Grading Equipment

Equipment Type	Amount	Daily Hours
Excavators		
Graders		
Water trucks		
Rubber Tired Dozers		
Tractors		
Loaders/Backhoes		

Explanation of items:

i.e: Phase 1 will use these to do leveling of the soils...

Table XX: Anticipated Installation Equipment

Equipment Type	Amount	Daily Hours
Generator Sets		
Water trucks		
Other Equipment		
Trenchers		
Skid Steer Loader		

i.e: Phase II will erect frames, fencing etc

Table XX: Anticipated Construction Equipment (What are you building)

Equipment Type	Amount	Daily Hours
Cranes		
Tractors		
Loaders/Backhoes		

i.e. Such as an "Operations and Maintenance Building Construction"

Explanation

Things to consider: Will there be paving?

Table 6: Anticipated Paving Equipment

Equipment Type	Amount	Daily Hours
Paver		
Roller		

Explanation

SUMMARIES & CONCLUSIONS

Table XX: Unmitigated Construction Emissions

Month	Emissions (lbs/day)				
	ROG	CO	Nox	PM10	PM2.5

Max lb/day					
ICAPCD Threshold					
Exceed?					

Level of Significance Before Mitigation:

Mitigation Measures:

MM- 1:
MM- 2:

Level of Significance After Mitigation:

Table XX: Mitigated Construction Emissions

Month	Emissions (lbs/day)				
	ROG	CO	Nox	PM10	PM2.5
Max lb/day					
ICAPCD Threshold					
Exceed?					

Impact 4: Would the project result in operational-related air quality impacts?

Impact Analysis:

Level of Significance Before Mitigation:

Mitigation Measures:

Level of Significance After Mitigation:

Impact 5: Would the Project result in a cumulative considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Impact Analysis:

- Project specific thresholds
- Air Quality plans
- Cumulative health impacts

Level of Significance Before Mitigation:

Mitigation Measures:

Level of Significance After Mitigation:

Impact 6: Would the project expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis:

Level of Significance Before Mitigation:

Mitigation Measures:

Level of Significance After Mitigation:

Impact 7: Would the project create objectionable odors affecting a substantial number of people?

Impact Analysis:

Level of Significance Before Mitigation:

Mitigation Measures:

Level of Significance After Mitigation:

Impact 8: Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact Analysis:

- Direct Emissions from Mobile Combustion
  a) Construction mobile
  b) Operational Mobile

Level of Significance Before Mitigation:

Mitigation Measures:

Level of Significance After Mitigation:

Impact 9: Would the project conflict with an application plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG?

Impact Analysis:

COUNTY EXECUTIVE OFFICE

Tony Rouhotas, Jr.
County Executive Officer
tonyrouhotas@co.imperial.ca.us
www.co.imperial.ca.us

County Administration Center
940 Main Street, Suite 208
El Centro, CA 92243
Tel: 442-265-1001
Fax: 442-265-1010

April 6, 2021

TO: Diana Robinson, Imperial County Planning and Development Services Department

FROM: Rosa Lopez, Executive Office

SUBJECT: Request for Comments CUP 20-0025 – Vikings Solar Energy & Storage Project

The County of Imperial Executive Office is responding to a Request for Comments CUP 20-0025 – Vikings Solar Energy & Storage Project. The Executive Office would like to inform the developer of several conditions and responsibilities under Conditional Use Permit (CUP) 20-0025. The conditions commence prior to the approval of an initial grading permit and subsequently continue throughout the permitting process. This includes, but not limited to:

- Fiscal and Economic Impact Analysis. The developer will be invoiced by the Executive Office for expenses related to the procurement of a consultant to produce a Fiscal and Economic Impact Analysis (FEIA).
- Establishing either a Development Agreement (DA) or a Public Benefit Agreement (PBA). It will include detailed conditions and mitigation measures related to the Fire Department, Sheriff's Department and other County Departments.
- Sales Tax Guarantee. The PBA will inform the developer on the process of providing the County of Imperial a copy of the CDTFA account number and sub-permit that its contractor and subcontractors (if any) for the jobsite and allocating all eligible use tax payments to the Imperial County (not the County pool). Permittee shall provide in written verification to the County Executive Office that the necessary sales and use tax permits have been obtained, prior to the issuance of any building permits.
- Public Benefit Fee. The Public Benefit Fee may include both and Agricultural Benefit Fee and a Community Benefit Fee.

Our office will work on a comprehensive DA or PBA with the developer and various County of Imperial departments that have demonstrated a need for mitigation under this project.

Should there be any concerns and/or questions, do not hesitate to contact me.

Valerie Grijalva

From: Mario Salinas
Sent: Tuesday, March 30, 2021 10:15 AM
To: Kimberly Noriega; Paul Deol; Margo Sanchez
Cc: Michael Abraham; Diana Robinson; Carina Gomez; Gabriela Robb; John Robb; Maria Scoville; Rosa Soto; Valerie Grijalva
Subject: RE: CUP20-0025 Request for Comments

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning Ms. Noriega,

Pertaining to request for comments on CUP20-0025, Division of Environmental Health does not have any comments at this time,

Thank you,

Mario Salinas, MBA
Environmental Health Compliance Specialist I
Imperial County Public Health Department
Division of Environmental Health
797 Main Street Suite B, El Centro, CA 92243
mariosalinas@co.imperial.ca.us
Phone: (442) 265-1888
Fax: (442) 265-1903
www.icphd.org

From: Kimberly Noriega <KimberlyNoriega@co.imperial.ca.us>
Sent: Friday, March 26, 2021 3:38 PM
To: Carlos Ortiz <CarlosOrtiz@co.imperial.ca.us>; Sandra Mendivil <SandraMendivil@co.imperial.ca.us>; Paul Deol <PaulDeol@co.imperial.ca.us>; Margo Sanchez <MargoSanchez@co.imperial.ca.us>; Matt Dessert <MattDessert@co.imperial.ca.us>; Monica Soucier <MonicaSoucier@co.imperial.ca.us>; Vanessa Ramirez <VanessaRamirez@co.imperial.ca.us>; Jorge Perez <JorgePerez@co.imperial.ca.us>; Jeff Lamoure <JeffLamoure@co.imperial.ca.us>; Mario Salinas <MarioSalinas@co.imperial.ca.us>; Robert Menvielle <RobertMenvielle@co.imperial.ca.us>; Robert Malek <RobertMalek@co.imperial.ca.us>; Andrew Loper <AndrewLoper@co.imperial.ca.us>; Guillermo Mendoza <GuillermoMendoza@co.imperial.ca.us>; Carlos Yee <CarlosYee@co.imperial.ca.us>; John Gay <JohnGay@co.imperial.ca.us>; Scott Sheppeard <scottsheppeard@icso.org>; Thomas Garcia <tgarcia@icso.org>

Cc: Michael Abraham <MichaelAbraham@co.imperial.ca.us>; Diana Robinson <DianaRobinson@co.imperial.ca.us>; Carina Gomez <CarinaGomez@co.imperial.ca.us>; Gabriela Robb <GabrielaRobb@co.imperial.ca.us>; John Robb <JohnRobb@co.imperial.ca.us>; Maria Scoville <mariascoville@co.imperial.ca.us>; Rosa Soto <RosaSoto@co.imperial.ca.us>; Valerie Grijalva <ValerieGrijalva@co.imperial.ca.us>
Subject: CUP20-0025 Request for Comments

Good Afternoon All,

Please see attached "Request for Review and Comment" and Application Submittal Documents for the proposed **Conditional Use Permit #20-0025 VIKINGS** Solar Project.

An Environmental Impact Report (EIR) will be prepared for this project and the project will later be scheduled to be heard at the EEC meeting as an informational item only. However, the intent of sending the attached "Request for review and comments package" now, is to have a preliminary consultation and input from your departments prior to the Notice of Proceed in an effort to allow more time for each agency to review and provide information (i.e. about your requirements, potential issues, questions) as we would on a Pre-Application Meeting. We are trying to get a list of each agency's requirements as early in the stages of the EIR as possible.

Comments are due by **April 7, 2021** at 5:00 PM.

Should you have any questions regarding this project, please feel free to contact Planner Diana Robinson at (442)265-1736 ext. 1751 or submit your comment letters to icpdscommentletters@co.imperial.ca.us.

Thank you,

Kimberly Noriega
Office Assistant III

Imperial County
Planning and Development Services
801 Main St.
El Centro, CA 92243
☎**Phone**: (442) 265-1736
☎**Fax**: (442) 265-1735

ADMINISTRATION / TRAINING
1078 Dogwood Road
Heber, CA 92249

Administration
Phone: (442) 265-6000
Fax: (760) 482-2427

Training
Phone: (442) 265-6011

OPERATIONS/PREVENTION
2514 La Brucherie Road
Imperial, CA 92251

Operations
Phone: (442) 265-3000
Fax: (760) 355-1482

Prevention
Phone: (442) 265-3020

March 29, 2021

RE: Vikings Solar Energy and Storage Project- CUP #20-0025
2910 & 3000 E. Nelsons Pits Rd., Holtville, CA 92250;
APN 050-070-018, 050-070-019, & 050-070-021

Imperial County Fire Department Fire Prevention Bureau would like to thank you for the opportunity to review and comment on Vikings Solar Energy and Storage Project- CUP #20-0025

The project description is developing and operating a one hundred (100) megawatt (MW) alternating current (AC) solar photovoltaic (PV) energy generation and Four hundred (450) megawatt hour (MWh) battery storage project. This project is located on approximately 603.61 acres.

Energy storage facilities create extreme hazards for firefighters and emergency responders with possibility of explosions, flammable gases, toxic fumes, water-reactive materials, electrical shock, corrosives, chemical burns. The hazards listed can create a potential significant impact on Imperial County Fire Department due personnel staffing to safely perform firefighting operations and Hazardous Material Response for a utility-scale energy storage facility. The location of the project will lead to longer response times. These longer response times can create incidents that can create difficulties in incident stabilization; therefor requiring additional personnel to safety manage the incident. Utility-scale energy storage will require specialized and reliable equipment to perform firefighting operations safely and effectively to NFPA, OSHA and ICFD standards and requirements.
Standards and requirements for energy storage system includes but not limited to:
NFPA:

1 Fire Code
70 National Electrical Code
855 Standard for the installation of Energy Storage System
111 Stored Electrical Energy Emergency and Standby Power System
1710 Standard for Organization and Deployment of Fire Suppression Operations, Emergency Medial Operations, and Special Operations to the Public by Career Fire Departments.

OSHA:

29 CFR 1910.134(g)(4)

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CFC:

Chapter 12 section 1206 Electrical Energy Storage System
Chapter 9 Fire Protection and Life Safety System

NFPA 1710 Chapter 5 section 5.2.3.1.2.1 states: In first –due response zones with tactical hazards, high hazard occupancies, or dense urban areas, as identified by the AHJ, these fire companies shall be staffed with a minimum of six on duty members. OSHA 29 CFR 1910.134(g)(4) states: Procedures for interior structural firefighting. In addition to the requirements set forth under paragraphs (g)(3), in interior structural fires, the employer shall ensure that:
1910.134(g)(4)(i): At least two employees enter the IDLH atmosphere and always remain in visual or voice contact with one another.
1910.134(g)(4)(ii): At least two employees are located outside the IDHL atmosphere; and
1910.134(g)(4)(iii): All employees engage in interior structural firefighting use SCBAs.

Mitigation Measure #1: Imperial County Fire Department is requiring the applicant in conjunction with the County of Imperial and Imperial County Fire Department provide cost to cover three (3) additional fulltime firefighter position at Imperial County Fire Department station 1 located in Imperial, CA. The cost of these positions shall be provided before issuance of the first building permit and extend for the life of the project. The County of Imperial and Imperial County Fire Department shall be responsible for managing of these cost and positions. These positions shall allow Imperial County Fire Department to maintain National Standards and OSHA requirements.

Mitigation Measure #2: Imperial County Fire Department is requiring the applicant to purchase a Type 1 fire engine, which will meet NFPA standard for structural firefighting. The fire engine cost estimate will be at current market value for the approved Fire Engine. Final cost, conditions and equipment of the fire engine shall be determined prior to the issuance of the initial grading permit

Mitigation Measure #3: Imperial County Fire Department is requiring the applicant to purchase hazardous Material equipment to respond emergencies within electrical energy storage systems. Air monitoring should be a priority for responders during and after any electrical energy storage system. 4-meter or other gas detection equipment to determine toxic gas levels determine by Imperial County Fire Department and Imperial County Heat Team. Additional equipment may be required upon determining the energy storage technology that will be used for the project. The applicant and Imperial County Fire Department shall make the determination of what is required to provide operational safety of emergency responders. This equipment will be

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maintain by Imperial County Fire Department and Imperial County Heat Team. This equipment shall be determined and provided to Imperial County Fire Department before the issuance of the first electrical energy storage system permit.

Fiscal Impacts and requirements for solar array farm installation within the project: For operation and maintenance, fees associated with Fire Department/OES.

(a) Permittee shall pay a fee of $50 per acre per year prior to commencement of the construction period to address the Imperial County Fire/OES expenses for service calls within the project Utility/Transmission area. Said amount shall be prorated monthly for periods of time less than a full year. Permittee shall provide advance, written notice to County Executive Office of the construction schedule and all revisions thereto.
Permittee shall pay an annual fee of $20 per acre per year during the post-construction, operational phase of the project to address the Imperial County Fire/OES expenses for service calls within the Project Utility/Transmission area. Said fee will be paid to the Fire Department to cover on-going maintenance and operations cost created by the project.

(b) Cost associated with items two above items shall annually adjusted on January 1st to add a CPI (Los Angeles) increase. Such costs associated with these items can be readjusted in the County's sole discretion if a new service analysis is prepared and that service analysis is approved by both the County and the Permittee.

Fire- In lieu of providing all-weather access roads for fire protection vehicles, the permittee shall be permitted to provide compacted dirt roads (in compliance with ICAPCD's rules and regulations) for fire protection vehicles if prior to the issuance of any grading permit for the Project shall purchase a Fire Engine with All Terrain Capabilities as specified and approved by the Fire Department. The Fire Engine cost estimate will be at Current Market Value for approved Fire Engine. Final Cost, conditions and equipment of the Fire Engine shall be determined prior to the issuance of the initial grading permit. The County agrees to require, as a condition of approval, other developers in the area to reimburse the Applicant for the expenses associated with the purchase of the Fire Engine. The Permittee shall be reimbursed only for those expenses more than their proportionate share for the purchase of the Fire Engine that the Permittee would have been required to pay. Furthermore, if a Fire Engine was already purchased by another developer in t the area, then the Permittee shall only be required to pay a fire mitigation in the amount of up to $100 per acre that would represent their proportionate share to reimburse the purchaser of the Fire Engine. The County shall be responsible for the managing the reimbursement component of this condition of approval.

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Further requirements and condition may be required for any solar installation within the project. Imperial County Fire Department reserve the right to comment on solar components within the project.

Other impacts from this project shall be evaluated by Imperial County Fire Department Fire Chief and Fire Code Official in determining any impacts of the project can or will cause a negative effect on Imperial County Fire Department and/or County of Imperial. Any impacts will be address between Imperial County Fire Department official, County of Imperial officials, applicants and/or developers which may include but not limited to:

- Capital purchases which may be required in providing services to this project
- Hazmat Operational Equipment
- Training
- Fiscal and operational costs

Additional requirements to follow but not limited to:

- An approved water supply capable of supplying the required fire flow determined by appendix B in the California Fire Code shall be installed and maintained. Private fire service mains and appurtenance shall be installed in accordance with NFPA 24.
- An approved automatic fire suppression system shall be installed on all required structures as per the California Fire Code. All fire suppression systems will be installed and maintained to the current adapted fire code and regulations.
- An approved automatic fire detection system shall be installed on all required structures as per the California Fire Code. All fire detection systems will be installed and maintained to the current adapted fire code and regulations.
- Fire department access roads and gates will be in accordance with the current adapted fire code and the facility will maintain a Knox Box for access on site.
- Compliance with all required sections of the fire code.
- Applicant shall provide product containment areas(s) for both product and water run-off in case of fire applications and retained for removal
- A Hazardous Waste Material Plan shall be submitted to Certified Unified Program Agency (CUPA) for their review and approval.
- All hazardous material and wastes shall be handled, store, and disposed as per the approved Hazardous Waste Materials Plan. All spills shall be documented and reported to Imperial County Fire Department and CUPA as required by the Hazardous Waste Material Plan

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Again thank you for the opportunity to comment. Imperial County Fire Department reserves the right to comment and request additional requirements pertaining to this project regarding fire and life safety measures, California building and fire code, and National Fire Protection Association standards at a later time as we see necessary.

If you have any questions, please contact the Imperial County Fire Prevention Bureau at 442-265-3020 or 442-265-3021.

Sincerely

Robert Malek
Deputy Chief
Imperial County Fire Department
Fire Prevention Bureau

Andrew Loper
Lieutenant/Fire Prevention Specialist
Imperial County Fire Department
Fire Prevention Bureau

CC: Alfredo Estrada Jr. Fire Chief
Imperial County Fire Department

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IMPERIAL COUNTY

PLANNING & DEVELOPMENT SERVICES

Ms. Diana Robinson
Planner III
Planning & Development Services Department
County of Imperial
801 Main Street
El Centro, CA 92243

SUBJECT: Vikings Solar Energy and Storage Project; CUP Application No. 20-0025

Dear Ms. Robinson:

On April 8, 2021, the Imperial Irrigation District received from the Imperial County Planning & Development Services Department, a request for agency comments on Conditional Use Permit application no. 20-0025 for the Vikings Solar Energy and Storage Project. The applicant, Vikings Energy Farm, LLC; proposes to develop a 100MW solar PV energy generation facility with a 100MW integrated battery storage on approximately 603.61 acres of land located at 2910 and 3000 east Nelson Pit Road, Holtville, California (APNs 050-070-018-000, -019-000, -021-000). The project's electrical output would be conveyed through a proposed gen-tie line interconnection to the IID's 230kV "KN/KS" transmission line.

The Imperial Irrigation District has reviewed the information and has the following comments:

1. If the project requires temporary construction or permanent electrical service at the distribution level, the applicant should be advised to contact Joel Lopez, IID Customer Project Development Planner, at (760) 482-3300, (760) 482-3444 or e-mail Mr. Lopez at jflopez@iid.com to initiate the customer service application process. In addition to submitting a formal application (available for download at the district website http://www.iid.com/home/showdocument?id=12923), the applicant will be required to submit a complete set of plans approved by the County of Imperial (in hardcopy and AutoCad formats), including site plan, plan & profile drawings, one-line diagrams, and electrical loads, panel size, voltage requirements, project schedule, and the estimated in-service date, as well as the applicable fees, permits, easements and environmental compliance documentation pertaining to the provision of electrical service to the project. The applicant shall be responsible for all costs and mitigation measures related to providing electrical service to the project.

2. Distribution-rated electrical service is limited in the area. A circuit study may be required. Any improvements or mitigation identified in the circuit study to enable the provision of electrical service shall be the financial responsibility of the applicant.

3. To insure there are no impacts to IID facilities, applicant should submit project plans, including grading & drainage and fencing plans, to IID Water Department Engineering Services for review and comment prior to final project design and CUP approval. IID WDES can be contacted at (760) 339-9265 for further information on this matter.

4. The project may impact IID drains with project site runoff flows draining into IID drains. To mitigate impacts, the project may require a comprehensive IID hydraulic drainage system analysis. IID's hydraulic drainage system analysis includes an associated drain impact fee.

5. A construction storm water permit from the California Regional Water Quality Control Board is required before commencing construction and an industrial storm water permit from CRWQCB is required for the operation of the proposed facility. The project's Storm Water Pollution Prevention Plan and storm water permits from CRWQCB should be submitted to IID for review.

6. In order to obtain a water supply from IID for a non-agricultural project, the project proponent will be required to comply with all applicable IID policies and regulations and may be required to enter into a water supply agreement. Such policies and regulations require, among other things, that all potential environmental and water supply impacts of the project be adequately assessed, appropriate mitigation developed if warranted, including any necessary approval conditions adopted by the relevant land use and permitting agencies.

7. If IID implements a water allocation or apportionment program pursuant to the IID Equitable Distribution Plan, or any amending or superseding policy for the same or similar purposes, during all or any part of the term of said water supply agreement, IID shall have the right to apportion the project's water as an industrial water user. Information on how to obtain a water supply agreement can be found at the district website https://www.iid.com/water/municipal-industrial-and-commercial-customers or obtained by contacting Justina Gamboa-Arce, Water Resources Planner at (760) 339-9085 or jgamboaarce@iid.com.

8. For information on procuring construction water, the applicant should contact IID South End Division at (760) 482-9800.

9. Any construction or operation on IID property or within its existing and proposed right of way or easements including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities; will require an encroachment permit, or encroachment agreement (depending on the circumstances). A copy of the IID encroachment permit application and instructions for its completion are available at https://www.iid.com/about-iid/department-directory/real-estate. The IID Real Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits or agreements.

10. In addition to IID's recorded easements, IID claims, at a minimum, a prescriptive right of way to the toe of slope of all existing canals and drains. Where space is limited and depending upon the specifics of adjacent modifications, the IID may claim additional secondary easements/prescriptive rights of ways to ensure operation and maintenance of IID's facilities can be maintained and are not impacted and if impacted mitigated. Thus, IID should be consulted prior to the installation of any facilities adjacent to IID's facilities.

Certain conditions may be placed on adjacent facilities to mitigate or avoid impacts to IID's facilities

11. The applicant may not use IID's canal or drain banks to access the project site. Any abandonment of easements or facilities shall be approved by IID based on systems (Irrigation, Drainage, Power, etc.) needs.

12. An IID encroachment permit is required to utilize existing surface-water drainpipe connections to drains and receive drainage service from the district. Surface-water drainpipe connections are only modified in accordance with IID Water Department Standards.

13. Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, water deliveries, canals, drains, etc.) need to be included as part of the project's CEQA and/or NEPA documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully analyzed. **Any and all mitigation necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent.**

Should you have any questions, please do not hesitate to contact me at 760-482-3609 or at dvargas@iid.com. Thank you for the opportunity to comment on this matter.

Respectfully,

Donald Vargas
Compliance Administrator II

Enrique B. Martinez – General Manager
Mike Pacheco – Manager, Water Dept.
Marilyn Del Bosque Gilbert – Manager, Energy Dept.
Constance Bergmark – Mgr. of Planning & Eng./Chief Elecl. Engineer, Energy Dept.
Enrique De Leon - Asst. Mgr., Energy Dept., Distr., Planning, Eng. & Customer Service
Jamie Asbury – Assoc. General Counsel
Vance Taylor – Asst. General Counsel
Michael P. Kemp – Superintendent, Regulatory & Environmental Compliance
Laura Cervantes – Supervisor, Real Estate

Diana Robinson

From: Timothy Reilly
Sent: April 8, 2021 11:46 AM
To: Diana Robinson
Cc: Michael Abraham; Mariela Moran; John Gay
Subject: RE: CUP20-0025 Request for Comments

Hi Diana. Thank you for the opportunity to comment.

Yes, similar to other projects, there are survey monuments along the project's footprint and/or within the project's interior. Those monuments not only control the project's property boundaries, but also are used to control the surrounding properties boundaries. The monuments must remain available throughout the duration of the project. Section 8771(b) of the Professional Land Surveyors' Act requires the monuments to be referenced by a land surveyor and a corner record of the references filed with the county surveyor prior to construction.

This project has at least one difference from other similar projects that I've reviewed. This project has multiple owners with the proposed construction *appearing* to cross over property lines. Personally, I think this is a recipe for disaster. If that appearance is correct, I would suggest that the design should be revised to NOT cross over that property lines. There was a similar project that had proposed construction crossing property lines, but it was under common ownership. In that case, the properties could have been merged, but the owners entered into a "lot tie" agreement with the County as an alternate solution. In this case, with multiple owners, I don't see that being possible. That is the basis for my suggestion that the design keep improvements from crossing property lines.

Those are my initial concerns at this time. Thank you again for the opportunity to comment.

Timothy J. Reilly, PLS
Certified Federal Surveyor
Imperial County Surveyor
CLSA Desert Chapter President Elect
(442) 265-1839 Direct
155 South 11th Street
El Centro, CA 92243

From: Diana Robinson <DianaRobinson@co.imperial.ca.us>
Sent: Thursday, April 8, 2021 7:59 AM
To: Timothy Reilly <TimothyReilly@co.imperial.ca.us>
Cc: Michael Abraham <MichaelAbraham@co.imperial.ca.us>; Mariela Moran <MarielaMoran@co.imperial.ca.us>; John Gay <JohnGay@co.imperial.ca.us>
Subject: FW: CUP20-0025 Request for Comments

Good morning Tim,

I realized that I did not mention this project on our conversation Monday when we spoke about VEGA 4. We have another project, very similar to VEGA 4 and we have the kick-off meeting later today. Could you please take a look at the attached file with project infomration? Comments provided for VEGA might apply for this one.

If you don't have time to review today, then could you please provide comments whenever you can? The request was sent at the same time that VEGA and was sent to John Gay, Carlos Yee and Guillermo Mendoza. We'll make sure to include you next time.

Any questions please let us know. Mariela Moran and I are working together on this one.

Thank you,
Diana

From: Kimberly Noriega <KimberlyNoriega@co.imperial.ca.us>
Sent: March 26, 2021 3:38 PM
To: Carlos Ortiz <CarlosOrtiz@co.imperial.ca.us>; Sandra Mendivil <SandraMendivil@co.imperial.ca.us>; Paul Deol <PaulDeol@co.imperial.ca.us>; Margo Sanchez <MargoSanchez@co.imperial.ca.us>; Matt Dessert <MattDessert@co.imperial.ca.us>; Monica Soucier <MonicaSoucier@co.imperial.ca.us>; Vanessa Ramirez <VanessaRamirez@co.imperial.ca.us>; Jorge Perez <JorgePerez@co.imperial.ca.us>; Jeff Lamoure <JeffLamoure@co.imperial.ca.us>; Mario Salinas <MarioSalinas@co.imperial.ca.us>; Robert Menvielle <RobertMenvielle@co.imperial.ca.us>; Robert Malek <RobertMalek@co.imperial.ca.us>; Andrew Loper <AndrewLoper@co.imperial.ca.us>; Guillermo Mendoza <GuillermoMendoza@co.imperial.ca.us>; Carlos Yee <CarlosYee@co.imperial.ca.us>; John Gay <JohnGay@co.imperial.ca.us>; Scott Sheppeard <scottsheppeard@icso.org>; Thomas Garcia <tgarcia@icso.org>
Cc: Michael Abraham <MichaelAbraham@co.imperial.ca.us>; Diana Robinson <DianaRobinson@co.imperial.ca.us>; Carina Gomez <CarinaGomez@co.imperial.ca.us>; Gabriela Robb <GabrielaRobb@co.imperial.ca.us>; John Robb <JohnRobb@co.imperial.ca.us>; Maria Scoville <mariascoville@co.imperial.ca.us>; Rosa Soto <RosaSoto@co.imperial.ca.us>; Valerie Grijalva <ValerieGrijalva@co.imperial.ca.us>
Subject: CUP20-0025 Request for Comments

Good Afternoon All,

Please see attached "Request for Review and Comment" and Application Submittal Documents for the proposed **Conditional Use Permit #20-0025 VIKINGS** Solar Project.

An Environmental Impact Report (EIR) will be prepared for this project and the project will later be scheduled to be heard at the EEC meeting as an informational item only. However, the intent of sending the attached "Request for review and comments package" now, is to have a preliminary consultation and input from your departments prior to the Notice of Proceed in an effort to allow more time for each agency to review and provide information (i.e. about your requirements, potential issues, questions) as we would on a Pre-Application Meeting. We are trying to get a list of each agency's requirements as early in the stages of the EIR as possible.

Comments are due by **April 7, 2021** at 5:00 PM.

Should you have any questions regarding this project, please feel free to contact Planner Diana Robinson at (442)265-1736 ext. 1751 or submit your comment letters to icpdscommentletters@co.imperial.ca.us.

Thank you,

Kimberly Noriega
Office Assistant III

Imperial County
Planning and Development Services
801 Main St.
El Centro, CA 92243
☎**Phone**: (442) 265-1736
☎**Fax**: (442) 265-1735

Letter of Transmittal:

December 7, 2020

TO: Director Jim Minnick, ICPDS

FROM: Jurg Heuberger on behalf of the VIKING SOLAR PROJECT

RE: Application for a Solar Project known as the Viking project

Jim:

Attached please find an application for a new solar project located east of the Highline Canal, along Nelson Pit Road.

This application includes the County form (Application), Owners Affidavit for one parcel, Project Description and fee in the amount of $11,000.00. It does not include the technical studies which are still being completed.

The application is being submitted in this manner to allow your staff to start preparing and RFP for the selection of an EIR Consultant. Also attached is a preliminary schedule to show you when those studies should be done and in your office.

Given this schedule and the amount of time it takes your office to be able to have a consultant under contract we belief you would have the full application with all supporting documents at about the same time or before you sign the contract.

With this memo therefore I am requesting the following:

- Please provide me the Planner's name assigned so that I can communicate with them directly as need and avoid having to bother you as much, not that I won't keep you in the loop.
- Please have your Planner begin the RFP for an EIR Consultant immediately to shorten the overall time frame.
- Please ask your staff to direct all comments, questions, requests etc. to me as I will be the only point of contact for the applicant.
- As in the other projects we have asked our consultants to not bother your staff or Public Works with calls and questions realizing that this takes away time from your staff that you currently may not have.
- Last but not least, as previously discussed with you, if you feel that hiring outside staff to handle this project would help expedite and assure timelines can be met, please let me know along with an idea of estimated costs.

One last note, please observe that this application includes some land owned by the County of Imperial. We have been and are currently working with Tony Rouhotas and Andrea Gonzales in the CEO's office to either purchase or lease the land. We had some last-minute issue show on the title which we are checking out with the help of Precision Engineering and hope to have done this week. Once that is finished, the CEO's office will have all information they asked for and can then proceed to the BOS for a final decision.

letter of Transmittal:

As always, if you or staff have questions, please call me at 760-996-0313 or via email or text.

Thanks once again for your assistance.

CONDITIONAL USE PERMIT

I.C. PLANNING & DEVELOPMENT SERVICES DEPT.
801 Main Street, El Centro, CA 92243 (760) 482-4236

- APPLICANT MUST COMPLETE ALL NUMBERED (black) SPACES -- Please type or print -

1. PROPERTY OWNER'S NAME ARB Inc., RL&R Strahm and the County of Imperial	EMAIL ADDRESS	
2. MAILING ADDRESS (Street / P O Box, City, State) See Attached Property Owner Exhibit	ZIP CODE See Attached Property Owner Exhibit	PHONE NUMBER
3. APPLICANT'S NAME Vikings Energy Farm, LLC	EMAIL ADDRESS ziad@zglobal.biz	
4. MAILING ADDRESS (Street / P O Box, City, State) 604 Sutter Street, Suite 250, Folsom, CA	ZIP CODE 95630	PHONE NUMBER 916-985-9461
4. ENGINEER'S NAME CA. LICENSE NO. To be determined	EMAIL ADDRESS To be determined	
5. MAILING ADDRESS (Street / P O Box, City, State) To be determined	ZIP CODE To be determined	PHONE NUMBER To be determined

6. ASSESSOR'S PARCEL NO. 050-070-018, 050-070-019 and 050-070-021	SIZE OF PROPERTY (in acres or square foot) Approximately 603.61 acres	ZONING (existing) A-2-RE and GS-RE
7. PROPERTY (site) ADDRESS 3000 Nelsons Pit Rd, Holtville, CA 92250 and 2910 Nelsons Pit Rd, Holtville, CA 92250		
8. GENERAL LOCATION (i.e. city, town, cross street) On the intersection of Nelsons Pit Rd and Graeser Rd. Approximately 5.5 miles east of the City of Holtville		
9. LEGAL DESCRIPTION See attached Property Owner Exhibit for detailed legal descriptions. (also see Attachment 1 [Project Description]) for Additional detail.		

PLEASE PROVIDE CLEAR & CONCISE INFORMATION (ATTACH SEPARATE SHEET IF NEEDED)

10. DESCRIBE PROPOSED USE OF PROPERTY (list and describe in detail) Develop the Vikings Solar Energy Generation & Storage, a nominal 100-megawatt (MW) alternating current (AC) solar photovoltaic energy generation and 450 megawatt hour (MWh) battery energy storage project (See Attachment 1 [Project Description])
11. DESCRIBE CURRENT USE OF PROPERTY: Idle land and Agriculture (see Attachment 1)
12. DESCRIBE PROPOSED SEWER SYSTEM: See Attachment 1
13. DESCRIBE PROPOSED WATER SYSTEM: See Attachment 1
14. DESCRIBE PROPOSED FIRE PROTECTION SYSTEM: See Attachment 1

15. IS PROPOSED USE A BUSINESS? ☑ Yes ☐ No	IF YES, HOW MANY EMPLOYEES WILL BE AT THIS SITE? 0 (See Attachment 1)

I / WE THE LEGAL OWNER (S) OF THE ABOVE PROPERTY CERTIFY THAT THE INFORMATION SHOWN OR STATED HEREIN IS TRUE AND CORRECT.

See attached owners affidavit
Print Name — Date

Applicant: Vikings Energy Farm, LLC
Signature

MOHAMMED S. ALRAI — 12/7/2020
Print Name — Date

Signature

REQUIRED SUPPORT DOCUMENTS

A. SITE PLAN
B. FEE
C. OTHER
D. OTHER

APPLICATION RECEIVED BY:		DATE		REVIEW / APPROVAL BY OTHER DEPT'S required.
APPLICATION DEEMED COMPLETE BY:		DATE		☐ P. W.
APPLICATION REJECTED BY:		DATE		☐ F. H. S.
TENTATIVE HEARING BY:		DATE		☐ A. P. C. D.
FINAL ACTION: ☐ APPROVED ☐ DENIED		DATE		☐ O. E. S.

CUP #

OWNER'S AFFIDAVIT

In the event the applicant is not owner, the following shall be signed and acknowledge by the owner.

Permission is hereby granted to Vikings Energy Farm, LLC. (Lessee, Tenant, Contractor-Specify) to apply for this

Conditional Use Permit (Land Use) (State permit type clearly i.e. building, land used) on the described property located at address

3000 E. Nelsons Pit Rd, Holtville, CA 92250 Further identified by Assessor's Parcel Number

(APN) 050-070-018-00 is hereby granted.

Roy Strahm
OWNER (SIGNATURE)

R.L & R Strahm
OWNER (TYPED OR PRINT)

2605 N. Holt Rd Holtville, ca 92250
OWNER'S ADDRESS

12-2-2020
DATE

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF Imperial } S.S.

On December 2, 2020 before me, Debra A. Baro, Notary Public, personally appeared Roy Strahm, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Debra A. Baro (Seal)

DEBRA A. BARO
Notary Public - California
Imperial County
Commission # 2205612
My Comm. Expires Jul 25, 2021

ATTENTION NOTARY: Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to unauthorized document.

Title or Type of Document _____
Number of Pages _____ Date of Document _____
Signer(s) Other Than Named Above _____

OWNER'S AFFIDAVIT

In the event the applicant is not owner, the following shall be signed and acknowledge by the owner.

Permission is hereby granted to Vikings Energy Farm, LLC. (Lessee, Tenant, Contractor-Specify) to apply for this Conditional Use Permit (Land Use) (State permit type clearly i.e. building, land used) on the described property located at address 2910 Nelsons Pit Road, Holtville, CA 92250 Further identified by Assessor's Parcel Number (APN) 050-070-019-000 is hereby granted.

OWNER (SIGNATURE)

John M. Perisich

OWNER (TYPED OR PRINT)

26000 Commercentre Dr., Lake Forest CA 92630

OWNER'S ADDRESS

12/2/2020

DATE

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

Please see attached California Acknowledgement

STATE OF CALIFORNIA
COUNTY OF Imperial } S.S.

On _____ before me, _____, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)

ATTENTION NOTARY: Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to unauthorized document.

Title or Type of Document _____
Number of Pages _____ Date of Document _____
Signer(s) Other Than Named Above _____

ACKNOWLEDGEMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Orange)

On December 2, 2020 before me, Tracy J. Kalantari
(insert name and title of the officer)

personally appeared John M. Perisich,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

TRACY J. KALANTARI
Notary Public – California
Orange County
Commission # 2184020
My Comm. Expires Feb 20, 2021

Signature T. Kalantari (Seal)

1.	PROPERTY OWNER'S NAME ARB Inc.	EMAIL ADDRESS	
2.	MAILING ADDRESS (Street / P O Box, City, State) 9201 Campo Road, San Diego, CA	ZIP CODE 91977	PHONE NUMBER
2B.	MAILING ADDRESS (Street / P O Box, City, State)	ZIP CODE	PHONE NUMBER

6.	ASSESSOR'S PARCEL NO. **050-070-019**	SIZE OF PROPERTY (in acres of square foot) 80.00 acres	ZONING (Existing) A-2-RE
7.	PROPERTY (site) ADDRESS 2910 Nelsons Pit Road, Holtville, CA 92250		
8.	GENERAL LOCATION (i.e. city, town, cross street) At the intersection of Nelsons Pit Rd. and Graeser Rd. Approximately five (5) miles east of Holtville, CA.		
9.	LEGAL DESCRIPTION THE WEST HALF OF THE NORTHWEST QUARTER OF SECTION THRITY-SIX (36), TOWNSHIP FIFTEEN (15) SOUTH, RANGE SIXTEEN (16) EAST, S.B.M., IN THE COUNTY OF IMPERIAL, STATE OF CALIFORNIA, ACCORDING TO THE UNITED STATES GOVERNMENT PLAT OF RESURVEY APPROVED NOVEMBER 4, 1908 AND ON FILE IN THE UNITED STATES LAND OFFICE AT LOS ANGELES, CALIFORNIA. APN: 050-070-19-00 APN: 050-070-019		

1.	PROPERTY OWNER'S NAME RL&R Strahm, a California general partnership	EMAIL ADDRESS	
2.	MAILING ADDRESS (Street / P O Box, City, State) 2605 N Holt, Holtville, CA	ZIP CODE 92250	PHONE NUMBER 760-356-5253
2B.	MAILING ADDRESS (Street / P O Box, City, State)	ZIP CODE	PHONE NUMBER

6.	ASSESSOR'S PARCEL NO. **050-070-018**	SIZE OF PROPERTY (in acres of square foot) 480 acres	ZONING (Existing) A-2-RE
7.	PROPERTY (site) ADDRESS 3000 E Nelsons Pit Rd, Holtville, CA 92250		
8.	GENERAL LOCATION (i.e. city, town, cross street) A quarter mile east of the intersection of Nelsons Pit Rd. and Graeser Rd. Approximately five (5) miles east of Holtville, CA.		
9.	LEGAL DESCRIPTION <u>PARCEL1:</u> THE EAST HALF, AND THE EAST HALF OF THE SOUTHWEST QUARTER, AND THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 36, TOWNSHIP 15 SOUTH, RANGE 16 EAST, SAN BERNARDINO BASE AND MERIDIAN, COUNTY OF		

IMPERIAL, STATE OF CALIFORNIA, ACCORDING TO THE UNITED STATES GOVERNMENT OFFICIAL PLAT OF SURVEY APPROVED AND ON FILE IN THE DISTRICT LAND OFFICE.

EXCEPTING THEREFROM, AN UNDIVIDED 50% INTEREST OF ALL MINERAL AND GEOTHERMAL RIGHTS NOW HELD BY THE GRANTOR APPURTENANT TO THE PROPERTY, BUT WITHOUT ANY RIGHT WHATSOEVER TO ENTER UPON THE SURFACE OF SAID LAND OR ANY PORTION THEREOF, AS RESERVED BY THE NUSSBAUM FAMILY LIMITED PARTNERSHIP, A CALIFORNIA LIMITED PARTNERSHIP, IN DEED RECORDED APRIL 1, 2008 AS INSTRUMENT NO. 08-9138 OF OFFICIAL RECORDS.

PARCEL 2:
THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 36, TOWNSHIP 15 SOUTH, RANGE 16 EAST, SAN BERNARDINO BASE AND MERIDIAN, COUNTY OF IMPERIAL, STATE OF CALIFORNIA, ACCORDING TO THE UNITED STATES GOVERNMENT PLAT OF SURVEY APPROVED AND ON FILE IN THE DISTRICT LAND OFFICE;

EXCEPTING THEREFROM ALL OIL AND MINERAL RIGHTS AS RESERVED BY J. LILLIAN CALLANDER IN DEED RECORDED DECEMBER 4, 1951 AS INSTRUMENT NO. 22 IN BOOK 827, PAGE(S) 354 OF OFFICIAL RECORDS.

EXCEPTING THEREFREOM, AN UNDIVIDED 50% INTEREST OF ALL MINERAL AND GEOTHERMAL RIGHTS NOW HELD BY THE GRANTOR APPURTENANT TO THE PROPERTY, BUT WITHOUT ANY RIGHT WHATSOEVER TO ENTER UPON THE SURFACE OF SAID LAND OR ANY PORTION THEREOF WITHIN 500 FEET VERTICAL DISTANCE BELOW THE SURFACE THEREOF, AS RESERVED BY THE NUSSBAUM FAMILY LIMITED PARTNERSHIP, A CALIORNIA LIMITED PARTNERSHIP, IN DEED RECORDED APRIL 1, 2008 AS INSTRUMENT NO. 08-9138 OF OFFICIAL RECORDS.

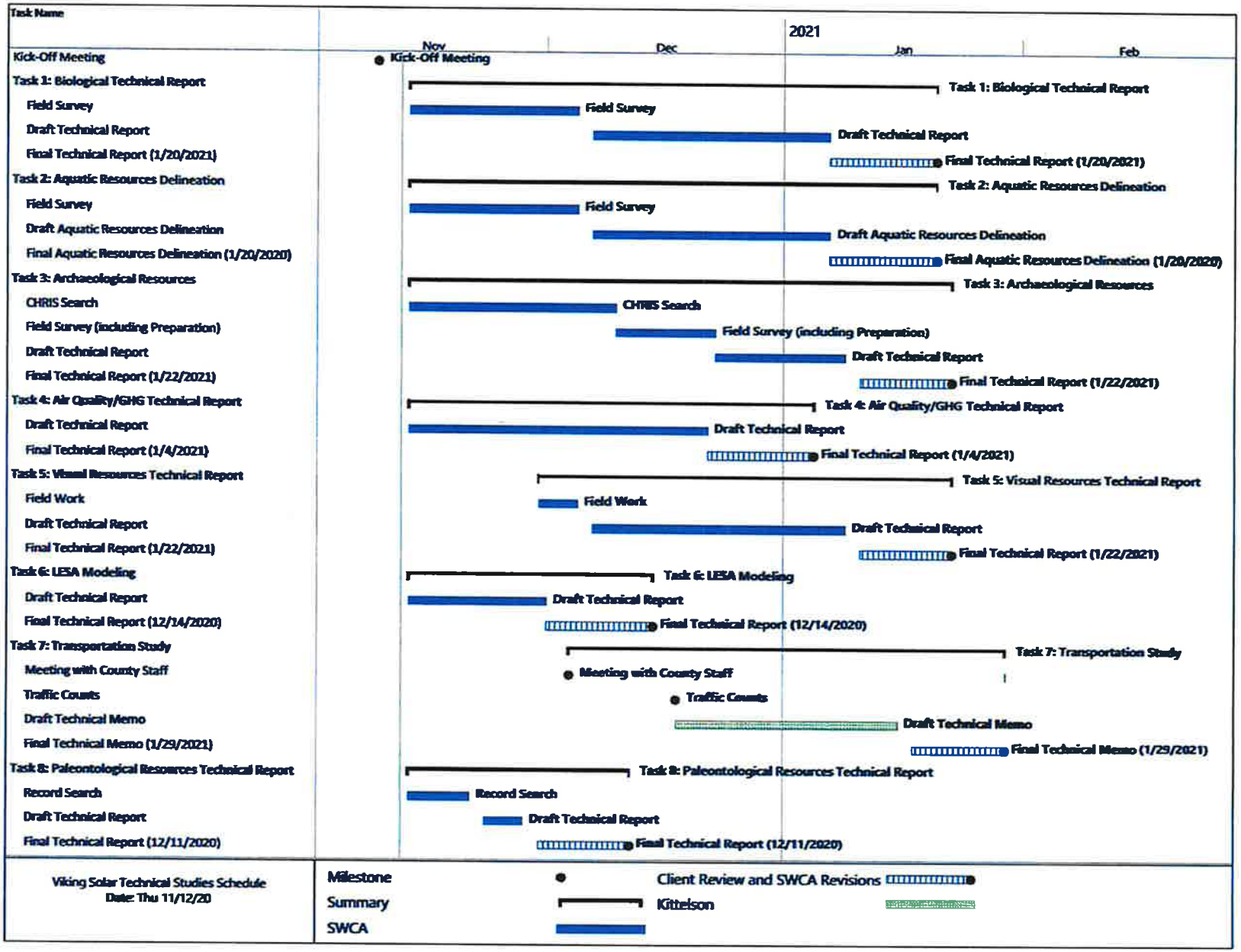
APN: 050-070-018

PARCEL 3:
A RIGHT OF WAY FOR AN UNDERGROUND TILE LINE ACROSS THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 36, TOWNSHIP 15 SOUTH, RANGE 16 EAST, SAN BERNARDINO BASE AND MERIDIAN, COUNTY OF IMPERIAL, STATE OF CALIFORNIA, ACCORDING TO THE UNITED STATES GOVERNMENT OFFICIAL PLAT OF SURVEY APPROVED AND ON FILE IN NTHE DISTRICT LAND OFFICE, THER CENTERLINE OF WHICH IS DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT WHICH IS 1,262.25 FEET SOUTH OF THE NORTHEAST CORNER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 36; THENCE NORTH 76°22'00' WEST, 1,185 FEET TO A POINT IN THE EAST BANK OF THE EAST HIGHLINE CANAL, AS NOW CONSTRUCTED ACROSS SAID PROPERTY.

APN: 050-070-018

1.	PROPERTY OWNER'S NAME County of Imperial	EMAIL ADDRESS		
2.	MAILING ADDRESS (Street / P O Box, City, State)	ZIP CODE	PHONE NUMBER	
2B.	MAILING ADDRESS (Street / P O Box, City, State)	ZIP CODE	PHONE NUMBER	
6.	ASSESSOR'S PARCEL NO. **050-070-021**	SIZE OF PROPERTY (in acres of square foot) 43.61 acres		ZONING (Existing) GS-RE
7.	PROPERTY (site) ADDRESS None available			
8.	GENERAL LOCATION (i.e. city, town, cross street) On the intersection of Nelsons Pit Rd. and Graeser Rd. Approximately five (5) miles east of Holtville, CA.			
9.	LEGAL DESCRIPTION			


Task Name
2021
Nov
Dec
Jan
Feb
Kick-Off Meeting
Kick-Off Meeting
Task 1: Biological Technical Report
Task 1: Biological Technical Report
Field Survey
Field Survey
Draft Technical Report
Draft Technical Report
Final Technical Report (1/20/2021)
Final Technical Report (1/20/2021)
Task 2: Aquatic Resources Delineation
Task 2: Aquatic Resources Delineation
Field Survey
Field Survey
Draft Aquatic Resources Delineation
Draft Aquatic Resources Delineation
Final Aquatic Resources Delineation (1/20/2020)
Final Aquatic Resources Delineation (1/20/2020)
Task 3: Archaeological Resources
Task 3: Archaeological Resources
CHRIS Search
CHRIS Search
Field Survey (including Preparation)
Field Survey (including Preparation)
Draft Technical Report
Draft Technical Report
Final Technical Report (1/22/2021)
Final Technical Report (1/22/2021)
Task 4: Air Quality/GHG Technical Report
Task 4: Air Quality/GHG Technical Report
Draft Technical Report
Draft Technical Report
Final Technical Report (1/4/2021)
Final Technical Report (1/4/2021)
Task 5: Visual Resources Technical Report
Task 5: Visual Resources Technical Report
Field Work
Field Work
Draft Technical Report
Draft Technical Report
Final Technical Report (1/22/2021)
Final Technical Report (1/22/2021)
Task 6: LESA Modeling
Task 6: LESA Modeling
Draft Technical Report
Draft Technical Report
Final Technical Report (12/14/2020)
Final Technical Report (12/14/2020)
Task 7: Transportation Study
Task 7: Transportation Study
Meeting with County Staff
Meeting with County Staff
Traffic Counts
Traffic Counts
Draft Technical Memo
Draft Technical Memo
Final Technical Memo (1/29/2021)
Final Technical Memo (1/29/2021)
Task 8: Paleontological Resources Technical Report
Task 8: Paleontological Resources Technical Report
Record Search
Record Search
Draft Technical Report
Draft Technical Report
Final Technical Report (12/11/2020)
Final Technical Report (12/11/2020)
Viking Solar Technical Studies Schedule
Date: Thu 11/12/20
Milestone
Summary
SWCA
Client Review and SWCA Revisions
Kittelson

VIKINGS SOLAR ENERGY GENERATION & STORAGE PROJECT DESCRIPTION

November 2020

Submitted to:

County of Imperial
Planning and Development Services Department
801 Main Street
El Centro, CA 92243-2811

Submitted by:

VIKINGS ENERGY FARM, LLC.
750 W. Main Street
El Centro, CA 92243

VIKINGS

SOLAR AND STORAGE PROJECT DESCRIPTION

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VIKINGS

SOLAR AND STORAGE PROJECT DESCRIPTION

Introduction

Vikings Energy Farm LLC. is proposing to develop the Vikings Solar Energy Generation & Storage (Project), a nominal 100-megawatt alternating current (MWAC) solar photovoltaic (PV) energy generation project with an integrated 100 MW/450MWh battery storage project on approximately 603.61 acres of land in the County of Imperial, California. This acreage includes and assumes the acquisition of site control for a parcel that is currently owned by Imperial County. Should site control for the County owned parcel not be acquired, the total approximate project acreage would decrease to 560 acres. The Project would be located on the intersection of Nelson Pit Rd. and Graeser Rd. It is approximately 5.5 miles east of the City of Holtville in Section 36 all within Township 15 South, and Range 16 East of the San Bernardino Base and Meridian (SBB&M) of the "Holtville East" topographic quadrangles 7.5-minute quadrangle (U.S. Department of the Interior, Geological Survey 2005). The electrical energy produced by the Project would be conducted through the proposed 230 kilovolt (kV) switching station and delivered to the Imperial Irrigation District ("IID") 230 kV "KN & KS" line.

Property Description

The Project would be located on Imperial County Assessor's Parcel Numbers (APNs) 050-070-018-000 (approximately 480.00 acres), 050-070-019 (approximately 80.00 acres) and 050-070-021 (approximately 43.61 acres, assuming site control is acquired), owned by RL&R Strahm, ARB Inc., and the County of Imperial, respectively.

Two of the Project area parcels are designated as "Agriculture" in the Imperial County General Plan and are zoned A-2-RE (General Agriculture with a Renewable Energy Overlay-areas that are suitable and intended primarily for agricultural uses [limited] and agricultural related compatible uses). The third Project area parcel is designated as "Recreation/Open Space" and is zoned GS-RE (Government/Special Public Zone- areas that allow for the construction, development and operation of governmental facilities and special public facilities, primarily this zone allows for all types of government owned and/or government operated facilities, be they office or other uses. It also allows for special public uses such as security facilities, jails, solid and/or hazardous wastes facilities and other similar special public benefit uses). Pursuant to Section 91703.02 (CONDITIONAL USE PERMITS) of the Imperial County Land Use Ordinance, Renewable Energy Projects must be located within the Renewable Energy Overlay Zone and may be permitted only through the issuance of a Conditional Use Permit (CUP) as approved by the Approving Authority unless otherwise allowed by applicable law. At present, the project is located within the Renewable Energy Zone. This Project Description is intended to support Vikings Energy Farm

LLC's requested approval of a Conditional Use Permit for the Vikings Project. Representative photographs of the Project areas will be provided.

Solar Technology

The Project proposes to utilize either thin film or crystalline solar photovoltaic (PV) technology modules mounted either on fixed frames or horizontal single-axis tracker (HSAT) systems. The fixed frame PV module arrays would be mounted on racks that would be supported by driven piles. The depth of the piles would be dependent on the recommendations of the geotechnical report prepared for the Project. The fixed-frame racks would be secured at a fixed tilt of 20° to 30° from horizontal facing a southerly direction. Current Project designs would have individual PV modules, mounted two high on a fixed frame, providing a two-foot ground clearance and resulting in the tops of the panels at approximately 7.5 feet above the ground. The fixed PV modules would be arranged in arrays spaced approximately 15 to 25 feet apart (pile-to-pile) to maximize performance and to allow access for panel cleaning (if necessary). These arrays would be separated from each other and the perimeter security fence by up to 30-foot wide interior roads. If HSAT technology is used, the PV modules would rotate around the north-south HSAT axis so that the PV modules would continue to face the sun as the sun moves across the sky throughout the day. The PV modules would reach their maximum height (up to nine (9) feet above the ground, depending on the final design) at both sunrise and sunset, when the HSAT is rotated to point the modules at the rising or setting sun. At noon, or when stowed during high winds, when the HSAT system is rotated so that the PV modules are horizontal, the nominal height would be about six (6) feet above the ground, depending on the final design. The individual PV systems would be arranged in large arrays by placing them in columns spaced approximately ten feet apart to maximize operational performance and to allow access for panel cleaning and maintenance. Current Project designs would have individual HSAT PV modules, each approximately two feet wide by four feet long (depending on the specific PV technology selected), mounted on a frame which is attached to an HSAT system. These HSAT arrays would be separated from each other and the perimeter security fence by up to 30-foot wide roads, consistent with agency emergency access requirements.

Project Facilities

Electrical Power System: Electricity generated by the PV modules would be collected by a direct current (DC) collection system routed underground in trenches. This DC power would be delivered to one of the pad-mounted inverters in weatherproof enclosures located within the arrays. The inverters would convert the DC power to three-phase alternating current (AC). The inverters could be connected to AC interconnection facilities which, if needed, would raise the voltage to 34.5 kV, or the interconnection voltage selected by the Projects. Underground or overhead collection lines (up to 34.5 kV) would transmit the electricity to the new Project substations.

Interconnection Facilities:

A new Project substation would be constructed on the southern boundary of APN 050-070-019 (See Figure 3). This substation would take the delivery of the up to 34.5 kV power from the Project and increase the voltage of the electricity to 230 kV, where it would feed into the interconnection switching station for metering and delivery to the IID 230 kV "KN & KS" Line. The substation would include a transformer, circuit breakers, meters, disconnect switches, and microwave or other communication facilities.

A new interconnection switching station would be constructed at the southern boundary of APN 050-070-019, immediately adjacent to the Project substation. The interconnection switching station would include circuit breakers, switches, overhead bus work, protective relay equipment and an electrical control building. This station would operate at 230 kV and be equipped with two circuit breakers, allowing for looping in of the IID 230 kV "KN & KS" Transmission line as well as connection to the Project Substation. The Project substation and interconnection switching station would be connected via a single overhead 230 kV line, tie line. The interconnection switching station would be enclosed within its own fence.

To connect to the Projects' interconnection facilities, the medium voltage power produced by the Project would be conveyed underground, or above ground where necessary, to cross over any sensitive site features. The Projects' interconnection facilities design would meet all necessary utility standards and requirements. As required, surge arrestors would be used to protect facilities and auxiliary equipment from lightning strikes or other disturbances. Distribution from the site would be via an overhead connection.

Security: Six-foot high security fencing would be installed around the perimeter of each of the Project sites at the commencement of construction and site access would be limited to authorized site workers. In addition, a motion detection system and closed-circuit camera system may also be installed. The site would be remotely monitored 24 hours per day, 7 days per week. In addition, routine unscheduled security rounds may be made by the security team monitoring the site security.

Battery System: The proposed battery energy storage system (BESS or ESS) would be constructed adjacent to, and on the same parcels as the project solar facilities and would consist of either lithium ion (Li-ion) or flow batteries. The batteries will either be housed in storage containers or buildings fitted with HVAC and fire suppression systems as necessary, depending on the final selection of battery technology. Inside the housing the batteries will be placed on racks, the orientation of which depends on the type of housing. Underground trenches with conduits will be used to connect the batteries to the control and monitoring systems, and inverters to convert the PV produced DC power to AC power.

Site Access

The Project site would include one primary access driveway, currently contemplated on E. Nelson Rd., bisecting the Project area and a secondary access driveway (if required) with a to be determined location (see Figure 3). This driveway would be provided with a minimum of 30-foot double swing gates with "Knox Box" for keyed entry. Internal to the Project site up to 30-foot wide roads would be provided between the PV arrays, as well as around the perimeter of each Project site inside the perimeter security fence to provide access to all areas of each site for maintenance and emergency vehicles.

Site Construction

Construction Activities: Construction activities would primarily involve demolition and grubbing; grading of the Project area to establish access roads and pads for electrical equipment (inverters and step–up transformers); trenching for underground electrical collection lines; and the installation of solar equipment and security fencing. Dust generated during construction would be controlled by watering and, as necessary, the use of other dust suppression methods and materials accepted by the Imperial County Air Pollution Control District (ICAPCD) or the California Air Resources Board (CARB). A temporary, portable construction supply container would be located at the Project sites at the beginning of construction and removed at the end of construction. The number of on–site construction workers for the solar project facilities is not expected to exceed 150 workers at any one time. The number of on-site construction workers for the battery storage facility and the substation is not expected to exceed 100 workers at any one time. If the two components (Solar PV and BESS) were constructed at the same time, the on-site construction workers is not expected to exceed 250 workers at any one time. Onsite parking would be provided for all construction workers.

Traffic: The construction worker traffic is expected to travel to the site from either Highway 115 east or Highway 8 east, to north on Miller Rd and east on Nelson Pit Rd to the project site.

Delivery trucks are expected to follow the same routes as the construction workers. An estimated two trucks would arrive at the Project sites each day during the first few weeks of construction of the solar generating facility.

Storm Water: Areas of the solar energy storage facilities where small amounts of contaminants could be released, such as the paved areas surrounding the containers, would be constructed in compliance with storm water quality management measures (i.e., basins and infiltration areas, where required) designed to meet State and local storm water management plan requirements. These paved areas would be maintained, and any vehicle leaks or spills would be periodically cleaned with absorbent materials to minimize the potential for contamination. All applicable local RWQCB discharge requirements and County of Imperial's water quality regulations would be adhered to in the development and maintenance of the project sites. A drainage study and

preliminary grading plan for the project will be prepared by a local civil engineering firm to address the potential environmental impacts of site drainage and stormwater.

Site Operations

Once construction is completed the Project would be remotely controlled. No employees would be based at the Project sites. Primary security–related monitoring would be done remotely. Security personnel may conduct unscheduled security rounds, and would be dispatched to the site in response to a fence breach or other alarm. Site maintenance workers may access the Project site periodically to clean the panels and maintain the equipment and Project area. The public would not have access to the facility. Access to the Project site would be infrequent and limited to authorized personnel.

Periodic washing of the PV modules is not expected to be necessary but could be needed to remove dust in order to maintain power generation efficiency. The amount of water needed for this purpose is conservatively estimated at 5 acre-feet per washing, with up to two washings per year, or a total of up to 10 acre-feet per year. This water would be water purchased from the IID. Each washing is expected to take one to two weeks to complete. Vegetation growing on the site would periodically (approximately every three months) be removed manually and/or treated with herbicides.

Water Resource Requirements

Water for Construction: Water for construction (primarily dust control) would be obtained from local IID irrigation canals or laterals in conformance with IID construction water acquisition requirements. Water would be picked up from a nearby lateral canal and delivered to the construction location by a water truck which would be capable of carrying approximately 4,000 gallons per load. It is estimated that up to 275 acre-feet of water would be needed for site grading and dust control over the expected Project construction period.

Water for Operations: Water for washing the PV modules, if required, would be purchased from the IID and delivered to the Project site by water trucks. The volume of water to be used for PV module washing and dust control, if needed, is estimated at up to 10 acre-feet per year.

Waste

Relatively small amounts of trash would be generated during construction from packaging materials delivered to the site. Construction related waste would be transported to a local landfill authorized to receive this waste for disposal. Portable toilets would be located on-site during construction and sanitary waste would be removed from the site by a local contractor.

No general waste is expected to be generated during normal operations. Sanitary waste generated during Project maintenance operations would be handled by bringing portable toilets to the Project sites, with waste removed periodically by a local contractor.

No hazardous waste is expected to be generated from the Project during either construction or normal Project operations.

Permit Requirements

The following permits/approvals may be required for the Project from the specified agencies, although some may not be applicable:

- Conditional Use Permit (Imperial County Planning & Development Services Department)
- Grading Permits (Imperial County Planning & Development Services Department)
- Building Permits (Imperial County Planning & Development Services Department)
- Dust Control Plan (Imperial County Air Pollution Control District)
- Rule 310 Exemption (Imperial County Air Pollution Control District)
- Encroachment Permits (Imperial County Public Works Department)
- Encroachment Permits (Imperial Irrigation District)
- Right-of-Way Permit (Imperial Irrigation District)
- Water Supply Agreement (Imperial Irrigation District)
- General Construction Storm Water Permit Notice of Intent/Storm Water Pollution Prevention Plan (California State Water Resource Control Board)
- Consultation for Sensitive Species (California Department of Fish and Wildlife)
- Consultation for Bird and Bat Conservation Strategy (U.S. Fish and Wildlife Service)

Environmental Protection Measures and Baseline Information

All Project construction and contractor personnel would be informed of Vikings Energy Farm LLC's policy regarding undue degradation of the environment. These measures are intended to prevent all unacceptable impacts from occurring as a result of the proposed construction and ongoing operations.

Aesthetics:

Visibility: Project lighting for security purposes would be directed on–site and would incorporate shielding as necessary to minimize illumination of the night sky and potential impacts to surrounding viewers. The solar panels would be constructed to absorb light and minimize any potential glare. There are no panoramic scenic views from the Project area. Visual simulations of the proposed Project will be provided.

Glare Effects: The Project PV modules are specifically designed to absorb light, rather than reflect it, as reflected light results in the loss of solar energy input, and thus electrical energy output. Modules are dark in color and have a coating that enables the panel to absorb as much of the available light as possible, which directly increases electrical energy production. The glare and reflectance levels from the PV panels are decisively lower than the glare and reflectance by standard glass and other common reflective surfaces, and the selected modules have anti-glare and anti-reflective features incorporated. A solar glare analysis will be prepared to determine the potential for glare from the Project.

Odors: No malodorous chemicals or substances would be used or generated during Project construction or operations.

Agricultural Land: The current agricultural map for Imperial County prepared by the California Farmland Mapping and Monitoring Program will be used to determine the amount of the Project lands that have been mapped in each of the eight mapping categories.

The California Department of Conservation (CDOC) Land Evaluation Site Assessment (LESA) model will be used to evaluate the potential for impacts from conversion of Project area agricultural land to solar use.

There are no Williamson Act lands within or adjacent to the Project area.

Air Quality: Fugitive dust would be controlled during construction and operations as required by Imperial County Air Pollution Control District (ICAPCD) Regulation VIII. A Dust Control Plan would be prepared in conformance with ICAPCD requirements to address construction and earthmoving activities, track-out, open areas and unpaved roads. It would include information on the dust suppressants to be applied and the specific surface treatment(s) and/or control measures to be utilized to control track-out where unpaved and/or access points join paved public access roads. There would be no air pollutant emissions from stationary sources from the Project during solar power generation operations.

Air pollutant emissions would be estimated using the California Emission Estimator Model (CalEEMod) and other emission estimating tools from both Project construction and operation activities.

Biological Resources: A biological resources survey of the Project area and a 500-foot buffer (the "Biological Survey Area," or BSA) will be conducted to identify plant associations and animals present; identify dominant tree, shrub and herbaceous flora; and identifying potential habitat for "sensitive" or "special status" species (or documenting the lack thereof).

Focused breeding season surveys of the BSA for burrowing owl may also be conducted in accordance with the methodologies provided in the California Department of Fish and Wildlife's (CDFW's) "2012 Staff Report on Burrowing Owl Mitigation."

Cultural Resources: A baseline cultural resources survey of the Project area will be conducted.

Flood Hazard: According to the applicable Federal Emergency Management Agency (FEMA) flood hazard map (06025C1775C, effective 09/26/2008), the Project area is not located within a special flood hazard area.

Geology, Soils and Mineral Resources:

- *Geologic Hazards*: The Project is not located in a seismically active area. No other potential geologic hazards are known within the Project area, and the preliminary geotechnical survey report will provide mitigation recommendations for any identified geologic hazards.
- *Soils*: Soils within the Project area will be evaluated, and the preliminary geotechnical survey report will provide mitigation recommendations for any identified geologic hazards.
- *Mineral Resources*: There are no known developed or potential mineral resources within or adjacent to the Project area.

Hazardous Materials: The Project would not use nor store any hazardous chemicals on site during normal operations. Fuel that may be used on site during construction would be stored in secondary containment. A Phase I Environmental Site Assessment will be conducted to evaluate the potential for hazardous substance or petroleum hydrocarbon contamination at the site.

Hydrology and Water Quality: A drainage study will be prepared for the Project area which will be used to complete the preliminary grading plan in conformance with Imperial County Public Works Department (ICPWD) requirements. A Notice of Intent to comply with the general permit for construction activities would be filed with the State Water Resources Control Board, and the required Storm Water Pollution Prevention Plan (SWPPP) would be prepared and implemented consistent with the requirements of the State Water Resources Control Board general permit.

Noise: The Project would not generate any appreciable noise during normal operations. Construction noise would be limited to the short–term use of heavy equipment operated during daylight hours and to construction traffic.

Traffic: An analysis of the potential traffic-related impacts associated with the construction and day-to-day operations of the proposed Project will be prepared and provided.

Public Services: The following Project measures would minimize the potential need for public fire and police services.

- *Fire Prevention*: The construction site and access roads would be cleared of all vegetation. The cleared areas would be maintained throughout site construction and solar plant operations. Fire extinguishers would be available around the construction sites. Up to three 10,000-gallon fire water tanks would be constructed across the Project sites and kept filled during operations to fight potential fires. Water that is used for

construction would also be available for firefighting. Personnel would be allowed to smoke only in designated areas.

- *Emergency Services*: The Project preliminary site plans have been prepared to accommodate the requirements of emergency services which may need to respond to an emergency at the Project. The Project site would be accessible from both a primary and secondary (if required) access driveway. These driveways would each be provided with a minimum of 30-foot double swing gates with "Knox Box" for keyed entry. Nominal 20-foot wide roads would be provided between the PV arrays, as well as around the perimeter of the Project site inside the perimeter security fence, to provide access for operational and emergency vehicles.
- *Security*: The entirety of each Project site would be enclosed within a gated security fence. Each site may also be monitored by a motion detection system and closed-circuit camera system.

Site Restoration: The Project areas are zoned A-2-RE and GS-RE, which are intended to provide areas for agricultural uses and government/special public facilities, respectively. At the end of the Project life, all facilities would be removed, and the Project sites restored to a condition for future agricultural and public and government uses. A proposed Project site restoration plan will be prepared and provided.

Utilities and Service Systems: Electricity for site security facilities when the panels are not generating power would be provided by the IID through interconnection with the existing IID distribution lines.

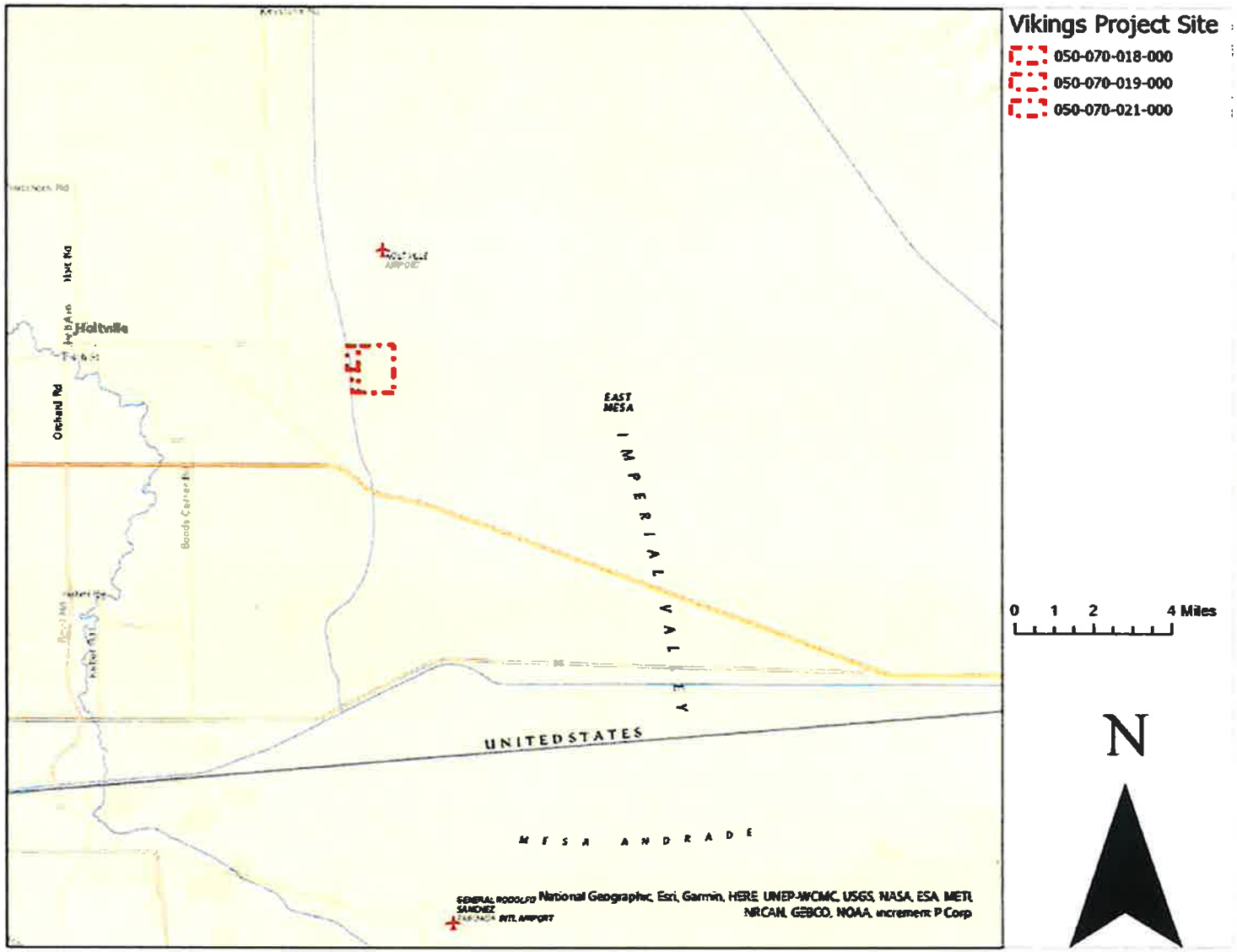

Figure 1 Project Location Map

Figure 2 Project Vicinity Map

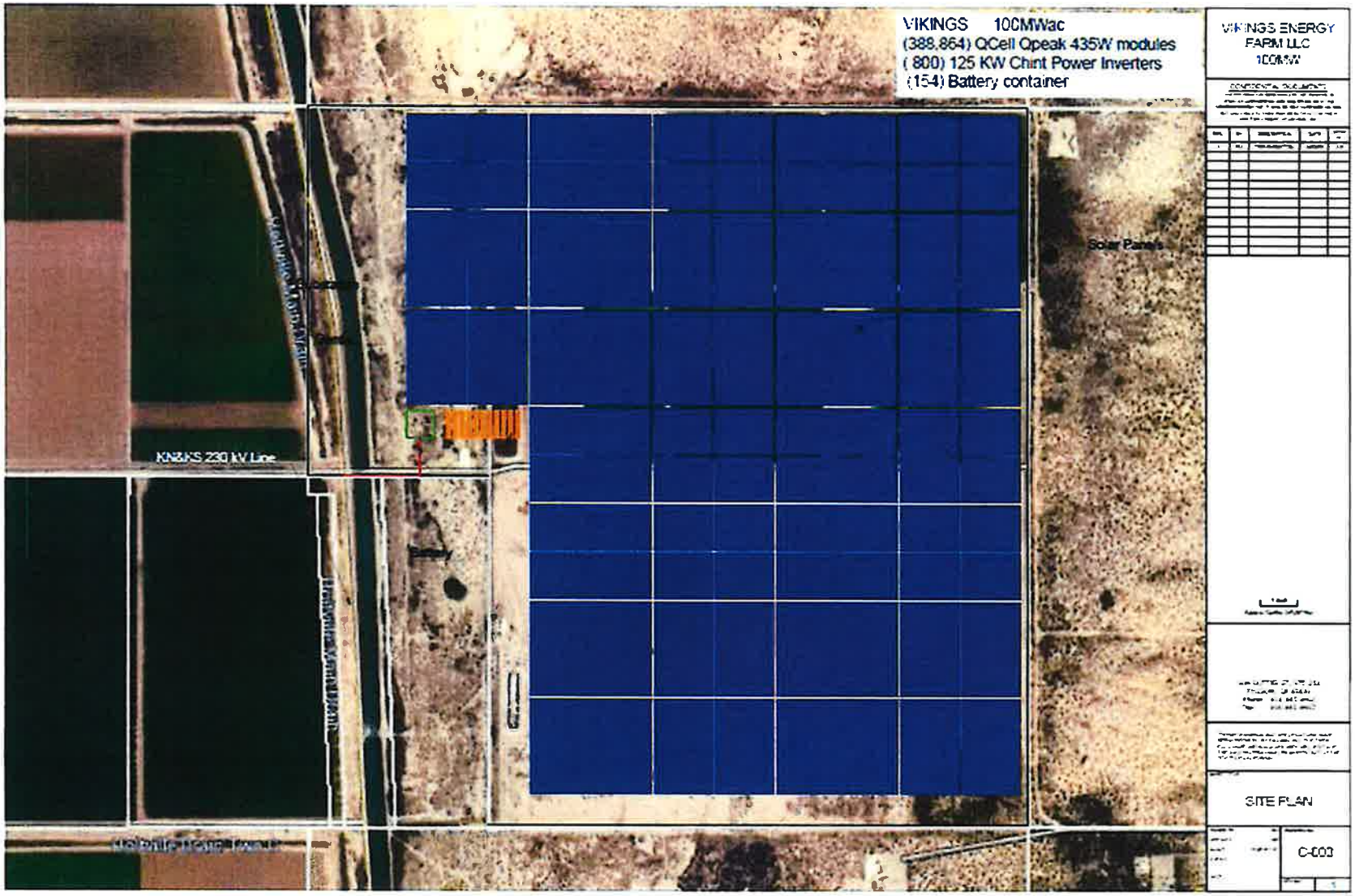

Figure 3 Project Site Map

Air Quality Technical Report
Vikings Solar Energy Storage Project
Imperial County, California

FEBRUARY 2021

PREPARED FOR

Vikings Energy Farm, LLC.

PREPARED BY

SWCA Environmental Consultants

AIR QUALITY TECHNICAL REPORT

Vikings Solar Energy Storage Project
Imperial County, California

Prepared For:
Vikings Energy Farm, LLC

Prepared By:
SWCA Environmental Consultants

AIR QUALITY TECHNICAL REPORT

VIKINGS SOLAR ENERGY STORAGE PROJECT
IMPERIAL COUNTY, CALIFORNIA

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1. INTRODUCTION

1.1 Purpose

SWCA Environmental Consultants (SWCA) has prepared this technical report document on behalf of Vikings Energy Farm, LLC (Applicant). The purpose of this report is to elucidate the methodologies used to evaluate the effects of the proposed installation of a solar photovoltaic (PV) energy generation project (Project) on ambient air quality & greenhouse gas emissions (GHGs). This air quality technical report provides a summary of the air pollutant and greenhouse gas (GHG) emissions calculation methodologies, a summary of the mitigation measures assumed and the results of the air pollutant and GHG emissions calculations. The evaluation of project impacts was conducted as recommended in the Imperial County Air Pollution Control District (ICAPCD) California Environmental Quality Act (CEQA) Guidelines dated December 2017[1], which is incorporated into this technical document by reference.

1.2 Project Location and Description

The Applicant is proposing to develop the Vikings Solar Energy Storage (Project), a nominal 100-megawatt alternating current (MWAC) solar photovoltaic (PV) energy generation project with an integrated battery storage project on approximately 604 acres of land in the County of Imperial, California. The Project would be located on the intersection of Nelson Pit Rd. and Graeser Rd. It is approximately 5.5 miles east of the City of Holtville (City) in Section 36 all within Township 15 South, and Range 16 East of the San Bernardino Base and Meridian (SBB&M) of the "Holtville East" topographic quadrangles 7.5-minute quadrangle. The Project will also include a substation and interconnection switching station.

1.3 Evaluated Air Pollutants

ICAPCD has developed Thresholds of Significance (TOS) for certain air pollutants with which to compare project impacts. Any project is significant if it triggers or exceeds the most appropriate evaluation criteria put forth by the ICAPCD. The project impacts were assessed for criteria air pollutants and precursors (CAP) and GHGs. Impacts from the Project construction will be compared to the screening criteria specified in the ICAPCD CEQA guidelines and the TOS specified below in Table 1. Impacts from the Project operations will be compared to the screening criteria specified in the ICAPCD CEQA guidelines and the TOS specified below in Table 2. No GHG emission threshold has been adopted by the City or ICAPCD for land development projects. The City is a member of the Southern California Association of Governments. Thus, in the absence of a threshold of significance for GHG emissions, the project is evaluated based on the South Coast Air Quality Management District's (SCAQMD) recommended/preferred option threshold for all land use types of 3,000 metric ton of carbon dioxide

[1] Imperial County APCD. 2017. California Environmental Quality Act (CEQA) Air Quality Handbook as Amended by ICAPCD. Available online at: https://apcd.imperialcounty.org/wp-content/uploads/2020/01/CEQAHandbk.pdf Accessed February 18, 2021.

equivalent (MT CO2E) per year[2]. This threshold is appropriate for addressing potential impacts associated with climate change. According to the SCAQMD, this is the primary threshold used for determining significance. Executive Order (EO) B-30-15, issued on April 29, 2015, establishes an interim GHG emission reduction goal for the state of California by 2030 of 40 percent below 1990 levels. This EO also directed all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in EO S-3-05. Additionally, this EO directed CARB to update its Climate Change Scoping Plan to address the 2030 goal. This SCAQMD threshold uses the EO S-3-05 goal as the basis for deriving the screening level. The screening level for stationary sources is based on an emission capture rate of 90 percent for all new or modified projects. The capture of 90 percent of new development establishes a strong basis for demonstrating that cumulative reductions are being achieved across the state to achieve AB 32 goals as discussed in the 2008 CAPCOA document[3]. Thus, for the purposes of this analysis, a threshold of 3,000 MT CO2E annually was utilized.

Table 1: ICAPCD Construction Significant Emissions Threshold

Criteria Pollutant	Daily Threshold (pounds)
Carbon Monoxide (CO)	550
Oxides of Nitrogen (NOx)	100
Volatile Organic Compounds (VOC)	75
Particulate Matter (PM10)	150

Table 2: ICAPCD Operations Significant Emissions Threshold

Criteria Pollutant	Tier 1 (pounds/day)	Tier 2 (pounds/day)
Carbon Monoxide (CO)	Less than 550	550 and greater
Oxides of Nitrogen (NOx)	Less than 137	137 and greater
Volatile Organic Compounds (VOC)	Less than 137	137 and greater
Oxides of Sulfur (SOx)	Less than 150	150 and greater
Particulate Matter (PM10)	Less than 150	150 and greater
Level of Significance	Less than Significant	Significant Impact

[2] South Coast AQMD. 2016. SCAQMD Interim GHG Significance Thresholds. Available online at: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds/page/2 Accessed February 18, 2021.

[3] CAPCOA. 2008. CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. http://capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-White-Paper.pdf Accessed February 18, 2021.

Additional analysis is required for development projects that are located in proximity to existing industrial operations that have the potential to emit toxic or hazardous air pollutants, or for commercial or industrial projects proposed within 1,000 feet of a school. The project site is not located within 1,000 feet of a school. The project would not result in the exposure of sensitive receptors to toxic or hazardous air pollutants from project operation. Construction equipment is diesel powered. Diesel particulate matter has been identified as a toxic air contaminant. The health risks associated with diesel particulate matter are those related to long-term exposures (i.e., cancer and chronic effects) as outlined in the 2015 California EPA Office of Environmental Health Hazard Assessment [OEHHA] document[4]. Long-term health risk effects to residents are generally evaluated for an exposure period of 70 years (i.e., lifetime exposure). Residential uses may be located in the vicinity of the project site, however, because risk is based on a lifetime of exposure and because construction would be short-term, impacts due to construction diesel particulate matter would be less than significant and is not evaluated quantitatively.

2. EMISSION CALCULATION METHODOLOGY

2.1 CalEEMod

California Emissions Estimator Model (CalEEMod)[5] Version 2016.3.2 was used to quantify CAP and GHG emissions from construction and operations. The CalEEMod output file and separate calculation spreadsheet are presented as Attachment 1, along with specific model assumptions. In addition to the CalEEMod calculations and results, Attachment 1 also contains CalEEMod remarks section which both identifies non default inputs and explains how CalEEMod is used to calculate emissions for the current project. When CalEEMod model defaults were retained and no further explanation was necessary, no "remarks" were recorded. Greenhouse gas emissions were also estimated in Attachment 1, based on CalEEMod emission factor assumptions.

Although the CalEEMod model is capable of calculating air pollutant emissions across many construction activities for a number of different projects, its default project types do not include a "solar photovoltaic energy generation" project. Therefore, the "user defined industrial" land use category was selected as a surrogate. Where applicable, CalEEMod defaults were retained as the model inputs. However, CalEEMod defaults were replaced with project specific information where available (such as the percentage of off-site roads to be traveled by off-site traffic which would be paved and unpaved). Defaults were also replaced if applicable project information was available and provided by the Applicant. Examples of this latter information include the mix of construction equipment expected to be used.

2.2 Construction Emissions Assumptions

Construction of the Project is assumed to commence in January 2022 and is estimated to take approximately one year. Project construction would consist of different activities which would be undertaken in phases, through to the operation of the Project. Construction of the project is expected to consist of the following activities which occur over the twelve months and have been broken down into five CalEEMod "phases". Demolition/Site Preparation; Grading; Trenching; Interconnection

[4] Office of Environmental Health Hazard Assessment's (OEHHA). 2015 Air Toxics Hot Spots Program. Risk Assessment Guidelines. Available at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf. Accessed February 2021.
[5] California Emissions Estimator Model. Developed for California Air Pollution Control Officers Association (CAPCOA) in Collaboration with California Air Districts. The model can be downloaded from: http://caleemod.com/. Accessed February 2021.

Construction; and Solar Array Installation. It has been conservatively assumed that several of these phases would occur simultaneously. Table 3 shows the Project's anticipated construction schedule and the phases that overlap to make the "worst-case" construction time period. This occurs in the last week of Month 3 when Trenching, Interconnection Construction and Solar Array Installation occur simultaneously.

Table 3: Anticipated Construction and Operations Schedule

	Month 1				Month 2				Month 3				Month 4				Month 5-12				Month 13
Construction Phase	Week #																				
Demolition/Site Preparation	X	X	X	X																	
Grading					X	X	X	X	X	X	X										
Trenching									X	X	X	X									
Interconnection Construction												X	X	X							
Solar Array Installation												X	X	X	X	X	X	X	X	X	
Operations Phase																					
Operations																					X

It is conservatively assumed that construction occurs six days per week for approximately twelve months. Tailpipe emissions for off-road and on-road equipment are based on fleet average values for the region. Fugitive dust emissions are assumed to be controlled by watering onsite exposed and disturbed project areas three times per day during construction and reducing speed on unpaved roads to 25 miles per hour.

Construction activities would primarily involve demolition and grubbing; grading of the Project area to establish access roads and pads for electrical equipment (inverters and step–up transformers); trenching for underground electrical collection lines; construction of a substation and interconnections, and the installation of solar equipment and security fencing. A temporary, portable construction supply container would be located at the Project sites at the beginning of construction and removed at the end of construction. The number of on–site construction workers for the Project is not anticipated to exceed 180 worker trips, 2 vendor trips, and 3 haul truck trips daily. Onsite parking would be provided for all construction workers. The construction phases equipment needs are listed in Table 4.

Table 4: Model Options Selected

Off-Road Equipment Type	Horsepower	# of Units	Hours/Day
Demolition/Site Preparation			
Rubber Tired Dozers	247	2	8
Scrapers	367	1	8
Skid Steer Loaders	65	1	8
Tractor/Loaders/Backhoes	97	2	8
Grading			
Excavators	158	1	8
Grader	187	2	8
Off-Highway Truck (water truck)	402	1	8
Rubber Tired Dozer	247	1	8
Scrapers	367	1	8
Tractor/Loaders/Backhoes	97	1	4
Trenching			
Cranes	231	1	7
Forklift	89	3	8
Generator Set	84	2	8
Other General Industrial Equipment	88	1	8
Skid Steer Loader	65	1	8
Tractor/Loaders/Backhoes	97	1	4
Trencher	78	2	8
Welder	46	1	8
Interconnection Construction			
Aerial Lift	63	1	6
Crane	231	1	6
Forklift	89	1	4
Generator Set	84	1	8
Other General Industrial Equipment	88	1	8
Tractor/Loaders/Backhoes	97	2	4
Welder	46	1	8
Solar Array Installation			
Bore/Drill Rigs	221	2	4
Crane	231	1	7
Forklift	89	5	4
Generator Set	84	1	8
Off-Highway Truck	402	1	6
Skid Steer Loader	65	2	8
Tractor/Loaders/Backhoes	97	3	7
Welder	46	1	8

2.3 Operation Emissions Assumptions

Once construction is completed the Project would be remotely controlled. No employees would be based at the Project sites. The Applicant anticipates that site maintenance workers may access the Project site periodically to clean the panels and maintain the equipment and Project area. The public would not have access to the facility.

Periodic washing of the PV modules is not expected to be necessary but could be needed to remove dust in order to maintain power generation efficiency. The amount of water needed for this purpose is conservatively estimated at 5 acre-feet per washing, with up to two washings per year, or a total of up to 10 acre-feet per year. This water would be water purchased from the IID. Each washing is expected to take one to two weeks to complete, using a water truck, also calculated using CalEEMod. Vegetation growing on the site would periodically (approximately every three months) be removed manually and/or treated with herbicides. Site maintenance would require approximately twelve worker trips to the Project per year. No general waste is expected to be generated during normal operations. The project is expected to consume small amounts of energy and this has been calculated using CalEEMod using the Imperial County CO2 intensity factor from CalEEMod and assumed 575 kWh/day (approximately 210,000 kWh/yr annual) daily energy usage. Therefore, the emissions from the outdoor water use, the water truck, energy use, and workers traveling to the Project during maintenance/operations are calculated during maintenance/operations.

3. EMISSIONS CALCULATION RESULTS

3.1 Criteria Air Pollutants

As calculated by CalEEMod, Table 5 and Table 6 provide the project's calculated construction and operational criteria air pollutant emissions.

Table 5: Average Daily and Total Construction Emissions

	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions (lbs/day) (unmitigated)	7.48	67.01	60.13	0.12	146.16	20.23
ICAPCD Threshold of Significance (lbs/day)	75	550	100	--	150	55

Source: Attachment 1
ICAPCD daily TOS are average daily emissions. CalEEMod results are conservatively presented as maximum daily emissions.

Table 6: Average Daily and Total Operations Emissions

	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions (lbs/day) (unmitigated)	0.53	3.65	3.94	0.01	1.99	0.32
ICAPCD Threshold of Significance (lbs/day)	55	550	55	150	150	55

Source: Attachment 1
ICAPCD daily TOS are average daily emissions. CalEEMod results are conservatively presented as maximum daily emissions.

Attachment 1 provides more detailed estimates for both construction and operations.

3.2 Greenhouse Gases

Table 7 provides the estimated GHG emissions for the project.

Table 7: Greenhouse Gas Emissions

	Project GHG Emissions (MT CO2e Annually)
Construction Emissions Total	876.34
Operation Annual Emissions Total	161.84

3.3 Conclusion

With or without the implementation of the proposed mitigation measures, the project's emissions from both short-term construction and long-term operation do not exceed the applicable ICAPCD thresholds of significance nor the SCAQMD GHG annual threshold of significance, thus the impacts to air quality are considered less than significant.

As discussed, construction and operational emissions would be less than the significance thresholds for all criteria pollutants. The project would not conflict with Clean Air Plans or expose sensitive receptors to substantial pollutant concentrations. Although impacts would be less than significant, the ICAPCD CEQA Air Quality Handbook contains standard mitigation measures for construction equipment and fugitive PM10 that shall be implemented at all construction sites, as appropriate and feasible, regardless of site size. The ICAPCD CEQA Air Quality Handbook also contains discretionary measures for fugitive PM10 control that shall be implemented at non-residential construction sites greater than five acres and residential construction sites greater than ten acres. The project is non-residential and is greater than 5 acres; therefore, all standard and discretionary measures for construction-related emissions shall apply. Additionally, the project is considered a Tier 1 project and is required to implement all standard operational mitigation measures. Construction emissions would not exceed the 3,000 MT CO2E annual threshold of significance. Therefore, the project's direct and indirect GHG emissions would have a less than significant impact on the environment. The project would not conflict with any local or state plan, policy, or regulation aimed at reducing GHG emissions from land use and development. Thus, impacts would be less than significant.

Attachment 1: Air Pollutant & GHG Emissions Calculations

Viking Solar Project

Imperial County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	604.00	User Defined Unit	604.00	26,310,240.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2023
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	1270.9	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 604 acres

Construction Phase - Construction duration approximately 12 months

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Trips and VMT - Max worker trips 180
Max vendor trips 2
Max haul trips 3

On-road Fugitive Dust - Approximately 0.3 miles of unpaved roads

Grading - Approx. 1 pass over the 604 acres during site prep
Approx. 4 passes over the 604 acres during grading

Vehicle Trips - No employees would be based at the Project sites
Up to 2 washings per year - Max 12 one way trips per washing visit

Road Dust - Approx 0.3 miles of unpaved road to project

Consumer Products - none

Area Coating - none

Energy Use - 500 kw-hr/day

Water And Wastewater - 10 acre-feet=3258516.48 gallons

Solid Waste - none

Construction Off-road Equipment Mitigation - Reduced speed

Operational Off-Road Equipment - Assume 2 solar panel washing per year each taking two days

Fleet Mix - Conservatively assume a medium heavy duty truck

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	13155100	0
tblAreaCoating	Area_Nonresidential_Interior	39465300	0

Viking Solar Project - Imperial County, Annual

tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	25
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tblConstructionPhase	NumDays	1,085.00	44.00
tblConstructionPhase	NumDays	10,850.00	27.00
tblConstructionPhase	NumDays	10,850.00	16.00
tblConstructionPhase	NumDays	10,850.00	243.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblEnergyUse	T24E	0.00	8.0000e-003
tblFleetMix	HHD	0.12	0.00
tblFleetMix	LDA	0.52	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.16	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.8190e-003	0.00
tblFleetMix	MCY	5.2400e-003	0.00
tblFleetMix	MDV	0.12	0.00
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tblFleetMix	MHD	0.02	1.00
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tblFleetMix	SBUS	7.2900e-004	0.00
tblFleetMix	UBUS	1.2350e-003	0.00
tblGrading	AcresOfGrading	88.00	2,416.00

tblGrading	AcresOfGrading	26.00	604.00
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tblLandUse	LotAcreage	0.00	604.00
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
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tblOnRoadDust	HaulingPercentPave	50.00	99.00

tblOnRoadDust	HaulingPercentPave	50.00	99.00
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tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
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tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	0.02
tblWater	OutdoorWaterUseRate	0.00	3,258,516.48

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.5929	4.4279	4.9351	9.9600e-003	13.8707	0.1974	14.0682	1.5527	0.1842	1.7369	0.0000	870.8531	870.8531	0.2187	0.0000	876.3198
Maximum	**0.5929**	**4.4279**	**4.9351**	**9.9600e-003**	**13.8707**	**0.1974**	**14.0682**	**1.5527**	**0.1842**	**1.7369**	**0.0000**	**870.8531**	**870.8531**	**0.2187**	**0.0000**	**876.3198**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.5929	4.4279	4.9351	9.9600e-003	10.2397	0.1974	10.4371	1.1026	0.1842	1.2868	0.0000	870.8522	870.8522	0.2187	0.0000	876.3190
Maximum	**0.5929**	**4.4279**	**4.9351**	**9.9600e-003**	**10.2397**	**0.1974**	**10.4371**	**1.1026**	**0.1842**	**1.2868**	**0.0000**	**870.8522**	**870.8522**	**0.2187**	**0.0000**	**876.3190**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**26.18**	**0.01**	**25.81**	**28.99**	**0.00**	**25.92**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2022	3-31-2022	1.8394	1.8394
2	4-1-2022	6-30-2022	1.0982	1.0982
3	7-1-2022	9-30-2022	1.0476	1.0476
		Highest	1.8394	1.8394

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.1000e-004	5.0000e-005	5.5500e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0108	0.0108	3.0000e-005	0.0000	0.0115
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	121.3366	121.3366	2.7700e-003	5.7000e-004	121.5766
Mobile	3.1500e-003	0.0496	0.0399	1.8000e-004	0.2412	5.0000e-005	0.2412	0.0255	5.0000e-005	0.0256	0.0000	16.9931	16.9931	4.1000e-004	0.0000	17.0033
Offroad	1.0100e-003	7.1400e-003	6.5800e-003	3.0000e-005		2.6000e-004	2.6000e-004		2.4000e-004	2.4000e-004	0.0000	2.3222	2.3222	7.5000e-004	0.0000	2.3410
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	20.8695	20.8695	4.8000e-004	1.0000e-004	20.9107
Total	**4.6700e-003**	**0.0568**	**0.0520**	**2.1000e-004**	**0.2412**	**3.3000e-004**	**0.2415**	**0.0255**	**3.1000e-004**	**0.0258**	**0.0000**	**161.5322**	**161.5322**	**4.4400e-003**	**6.7000e-004**	**161.8430**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.1000e-004	5.0000e-005	5.5500e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0108	0.0108	3.0000e-005	0.0000	0.0115
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	121.3366	121.3366	2.7700e-003	5.7000e-004	121.5766
Mobile	3.1500e-003	0.0496	0.0399	1.8000e-004	0.2412	5.0000e-005	0.2412	0.0255	5.0000e-005	0.0256	0.0000	16.9931	16.9931	4.1000e-004	0.0000	17.0033
Offroad	1.0100e-003	7.1400e-003	6.5800e-003	3.0000e-005		2.6000e-004	2.6000e-004		2.4000e-004	2.4000e-004	0.0000	2.3222	2.3222	7.5000e-004	0.0000	2.3410
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	20.8695	20.8695	4.8000e-004	1.0000e-004	20.9107
Total	**4.6700e-003**	**0.0568**	**0.0520**	**2.1000e-004**	**0.2412**	**3.3000e-004**	**0.2415**	**0.0255**	**3.1000e-004**	**0.0258**	**0.0000**	**161.5322**	**161.5322**	**4.4400e-003**	**6.7000e-004**	**161.8430**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition/Site Preparation	Site Preparation	1/1/2022	1/31/2022	6	26	
2	Grading	Grading	2/1/2022	3/23/2022	6	44	
3	Trenching	Building Construction	3/1/2022	3/31/2022	6	27	
4	Interconnection Connection	Building Construction	3/24/2022	4/11/2022	6	16	
5	Solar Array Installation	Building Construction	3/24/2022	12/31/2022	6	243	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 2416

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition/Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Demolition/Site Preparation	Scrapers	1	8.00	367	0.48
Demolition/Site Preparation	Skid Steer Loaders	1	8.00	65	0.37
Demolition/Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	2	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Trenching	Generator Sets	2	8.00	84	0.74

Interconnection Connection	Aerial Lifts	1	6.00	63	0.31
Trenching	Other General Industrial Equipment	1	8.00	88	0.34
Trenching	Skid Steer Loaders	1	8.00	65	0.37
Trenching	Trenchers	2	8.00	78	0.50
Trenching	Cranes	1	7.00	231	0.29
Interconnection Connection	Cranes	1	6.00	231	0.29
Interconnection Connection	Forklifts	1	4.00	89	0.20
Interconnection Connection	Other General Industrial Equipment	1	8.00	88	0.34
Interconnection Connection	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Interconnection Connection	Welders	1	8.00	46	0.45
Solar Array Installation	Bore/Drill Rigs	2	4.00	221	0.50
Solar Array Installation	Forklifts	5	4.00	89	0.20
Solar Array Installation	Generator Sets	1	8.00	84	0.74
Solar Array Installation	Off-Highway Trucks	1	6.00	402	0.38
Solar Array Installation	Skid Steer Loaders	2	8.00	65	0.37
Solar Array Installation	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Solar Array Installation	Cranes	1	7.00	231	0.29
Trenching	Forklifts	3	8.00	89	0.20
Interconnection Connection	Generator Sets	1	8.00	84	0.74
Trenching	Welders	1	8.00	46	0.45
Trenching	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Solar Array Installation	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition/Site Preparation	6	180.00	2.00	3.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	7	180.00	2.00	3.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	12	0.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Interconnection Connection	8	0.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Solar Array Installation	16	180.00	2.00	3.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition/Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4769	0.0000	0.4769	0.1207	0.0000	0.1207	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0376	0.4005	0.2522	5.3000e-004		0.0182	0.0182		0.0167	0.0167	0.0000	46.3155	46.3155	0.0150	0.0000	46.6899
Total	**0.0376**	**0.4005**	**0.2522**	**5.3000e-004**	**0.4769**	**0.0182**	**0.4950**	**0.1207**	**0.0167**	**0.1374**	**0.0000**	**46.3155**	**46.3155**	**0.0150**	**0.0000**	**46.6899**

3.2 Demolition/Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.0000e-004	4.0000e-005	0.0000	4.5000e-004	0.0000	4.5000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1079	0.1079	0.0000	0.0000	0.1080
Vendor	9.0000e-005	2.5500e-003	6.9000e-004	1.0000e-005	0.0101	1.0000e-005	0.0101	1.0500e-003	1.0000e-005	1.0500e-003	0.0000	0.7795	0.7795	4.0000e-005	0.0000	0.7804
Worker	0.0118	8.7100e-003	0.0814	1.1000e-004	0.9850	8.0000e-005	0.9851	0.1004	8.0000e-005	0.1004	0.0000	10.1202	10.1202	7.5000e-004	0.0000	10.1388
Total	**0.0119**	**0.0116**	**0.0821**	**1.2000e-004**	**0.9955**	**9.0000e-005**	**0.9956**	**0.1015**	**9.0000e-005**	**0.1015**	**0.0000**	**11.0075**	**11.0075**	**7.9000e-004**	**0.0000**	**11.0272**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1860	0.0000	0.1860	0.0471	0.0000	0.0471	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0376	0.4005	0.2522	5.3000e-004		0.0182	0.0182		0.0167	0.0167	0.0000	46.3154	46.3154	0.0150	0.0000	46.6899
Total	**0.0376**	**0.4005**	**0.2522**	**5.3000e-004**	**0.1860**	**0.0182**	**0.2042**	**0.0471**	**0.0167**	**0.0638**	**0.0000**	**46.3154**	**46.3154**	**0.0150**	**0.0000**	**46.6899**

3.2 Demolition/Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.0000e-004	4.0000e-005	0.0000	3.6000e-004	0.0000	3.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1079	0.1079	0.0000	0.0000	0.1080
Vendor	9.0000e-005	2.5500e-003	6.9000e-004	1.0000e-005	8.0200e-003	1.0000e-005	8.0300e-003	8.4000e-004	1.0000e-005	8.4000e-004	0.0000	0.7795	0.7795	4.0000e-005	0.0000	0.7804
Worker	0.0118	8.7100e-003	0.0814	1.1000e-004	0.7812	8.0000e-005	0.7813	0.0800	8.0000e-005	0.0801	0.0000	10.1202	10.1202	7.5000e-004	0.0000	10.1388
Total	**0.0119**	**0.0116**	**0.0821**	**1.2000e-004**	**0.7896**	**9.0000e-005**	**0.7897**	**0.0809**	**9.0000e-005**	**0.0809**	**0.0000**	**11.0075**	**11.0075**	**7.9000e-004**	**0.0000**	**11.0272**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4136	0.0000	1.4136	0.2112	0.0000	0.2112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0726	0.7674	0.4650	1.2500e-003		0.0303	0.0303		0.0279	0.0279	0.0000	109.9591	109.9591	0.0356	0.0000	110.8482
Total	**0.0726**	**0.7674**	**0.4650**	**1.2500e-003**	**1.4136**	**0.0303**	**1.4439**	**0.2112**	**0.0279**	**0.2390**	**0.0000**	**109.9591**	**109.9591**	**0.0356**	**0.0000**	**110.8482**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.0000e-004	4.0000e-005	0.0000	4.5000e-004	0.0000	4.5000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1079	0.1079	0.0000	0.0000	0.1080
Vendor	1.6000e-004	4.3100e-003	1.1700e-003	1.0000e-005	0.0171	1.0000e-005	0.0171	1.7700e-003	1.0000e-005	1.7800e-003	0.0000	1.3191	1.3191	7.0000e-005	0.0000	1.3207
Worker	0.0200	0.0147	0.1378	1.9000e-004	1.6669	1.4000e-004	1.6670	0.1698	1.3000e-004	0.1700	0.0000	17.1265	17.1265	1.2600e-003	0.0000	17.1580
Total	**0.0202**	**0.0194**	**0.1390**	**2.0000e-004**	**1.6844**	**1.5000e-004**	**1.6845**	**0.1717**	**1.4000e-004**	**0.1718**	**0.0000**	**18.5534**	**18.5534**	**1.3300e-003**	**0.0000**	**18.5867**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5513	0.0000	0.5513	0.0824	0.0000	0.0824	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0726	0.7674	0.4650	1.2500e-003		0.0303	0.0303		0.0279	0.0279	0.0000	109.9590	109.9590	0.0356	0.0000	110.8480
Total	**0.0726**	**0.7674**	**0.4650**	**1.2500e-003**	**0.5513**	**0.0303**	**0.5816**	**0.0824**	**0.0279**	**0.1102**	**0.0000**	**109.9590**	**109.9590**	**0.0356**	**0.0000**	**110.8480**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.0000e-004	4.0000e-005	0.0000	3.6000e-004	0.0000	3.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1079	0.1079	0.0000	0.0000	0.1080
Vendor	1.6000e-004	4.3100e-003	1.1700e-003	1.0000e-005	0.0136	1.0000e-005	0.0136	1.4200e-003	1.0000e-005	1.4300e-003	0.0000	1.3191	1.3191	7.0000e-005	0.0000	1.3207
Worker	0.0200	0.0147	0.1378	1.9000e-004	1.3221	1.4000e-004	1.3222	0.1354	1.3000e-004	0.1355	0.0000	17.1265	17.1265	1.2600e-003	0.0000	17.1580
Total	**0.0202**	**0.0194**	**0.1390**	**2.0000e-004**	**1.3360**	**1.5000e-004**	**1.3362**	**0.1368**	**1.4000e-004**	**0.1370**	**0.0000**	**18.5534**	**18.5534**	**1.3300e-003**	**0.0000**	**18.5867**

3.4 Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0359	0.3289	0.3214	5.2000e-004		0.0187	0.0187		0.0176	0.0176	0.0000	44.5735	44.5735	9.6900e-003	0.0000	44.8157
Total	**0.0359**	**0.3289**	**0.3214**	**5.2000e-004**		**0.0187**	**0.0187**		**0.0176**	**0.0176**	**0.0000**	**44.5735**	**44.5735**	**9.6900e-003**	**0.0000**	**44.8157**

3.4 Trenching - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0359	0.3289	0.3214	5.2000e-004		0.0187	0.0187		0.0176	0.0176	0.0000	44.5734	44.5734	9.6900e-003	0.0000	44.8156
Total	**0.0359**	**0.3289**	**0.3214**	**5.2000e-004**		**0.0187**	**0.0187**		**0.0176**	**0.0176**	**0.0000**	**44.5734**	**44.5734**	**9.6900e-003**	**0.0000**	**44.8156**

3.4 Trenching - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Interconnection Connection - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0105	0.0947	0.0989	1.7000e-004		4.6300e-003	4.6300e-003		4.4000e-003	4.4000e-003	0.0000	14.4777	14.4777	3.1300e-003	0.0000	14.5559
Total	**0.0105**	**0.0947**	**0.0989**	**1.7000e-004**		**4.6300e-003**	**4.6300e-003**		**4.4000e-003**	**4.4000e-003**	**0.0000**	**14.4777**	**14.4777**	**3.1300e-003**	**0.0000**	**14.5559**

3.5 Interconnection Connection - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0105	0.0947	0.0989	1.7000e-004		4.6300e-003	4.6300e-003		4.4000e-003	4.4000e-003	0.0000	14.4777	14.4777	3.1300e-003	0.0000	14.5559
Total	**0.0105**	**0.0947**	**0.0989**	**1.7000e-004**		**4.6300e-003**	**4.6300e-003**		**4.4000e-003**	**4.4000e-003**	**0.0000**	**14.4777**	**14.4777**	**3.1300e-003**	**0.0000**	**14.5559**

3.5 Interconnection Connection - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Solar Array Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2927	2.7000	2.8092	6.0300e-003		0.1246	0.1246		0.1167	0.1167	0.0000	523.9889	523.9889	0.1459	0.0000	527.6355
Total	**0.2927**	**2.7000**	**2.8092**	**6.0300e-003**		**0.1246**	**0.1246**		**0.1167**	**0.1167**	**0.0000**	**523.9889**	**523.9889**	**0.1459**	**0.0000**	**527.6355**

3.6 Solar Array Installation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.0000e-004	4.0000e-005	0.0000	4.5000e-004	0.0000	4.5000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1079	0.1079	0.0000	0.0000	0.1080
Vendor	8.8000e-004	0.0238	6.4400e-003	8.0000e-005	0.0943	5.0000e-005	0.0944	9.7800e-003	5.0000e-005	9.8300e-003	0.0000	7.2850	7.2850	3.7000e-004	0.0000	7.2941
Worker	0.1105	0.0814	0.7609	1.0500e-003	9.2057	7.6000e-004	9.2064	0.9380	7.0000e-004	0.9387	0.0000	94.5847	94.5847	6.9600e-003	0.0000	94.7588
Total	**0.1114**	**0.1055**	**0.7673**	**1.1300e-003**	**9.3004**	**8.1000e-004**	**9.3012**	**0.9478**	**7.5000e-004**	**0.9486**	**0.0000**	**101.9775**	**101.9775**	**7.3300e-003**	**0.0000**	**102.1608**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2927	2.7000	2.8092	6.0300e-003		0.1246	0.1246		0.1167	0.1167	0.0000	523.9883	523.9883	0.1459	0.0000	527.6348
Total	**0.2927**	**2.7000**	**2.8092**	**6.0300e-003**		**0.1246**	**0.1246**		**0.1167**	**0.1167**	**0.0000**	**523.9883**	**523.9883**	**0.1459**	**0.0000**	**527.6348**

3.6 Solar Array Installation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.0000e-004	4.0000e-005	0.0000	3.6000e-004	0.0000	3.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1079	0.1079	0.0000	0.0000	0.1080
Vendor	8.8000e-004	0.0238	6.4400e-003	8.0000e-005	0.0750	5.0000e-005	0.0750	7.8400e-003	5.0000e-005	7.9000e-003	0.0000	7.2850	7.2850	3.7000e-004	0.0000	7.2941
Worker	0.1105	0.0814	0.7609	1.0500e-003	7.3015	7.6000e-004	7.3023	0.7476	7.0000e-004	0.7483	0.0000	94.5847	94.5847	6.9600e-003	0.0000	94.7588
Total	**0.1114**	**0.1055**	**0.7673**	**1.1300e-003**	**7.3768**	**8.1000e-004**	**7.3776**	**0.7555**	**7.5000e-004**	**0.7562**	**0.0000**	**101.9775**	**101.9775**	**7.3300e-003**	**0.0000**	**102.1608**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.1500e-003	0.0496	0.0399	1.8000e-004	0.2412	5.0000e-005	0.2412	0.0255	5.0000e-005	0.0256	0.0000	16.9931	16.9931	4.1000e-004	0.0000	17.0033
Unmitigated	3.1500e-003	0.0496	0.0399	1.8000e-004	0.2412	5.0000e-005	0.2412	0.0255	5.0000e-005	0.0256	0.0000	16.9931	16.9931	4.1000e-004	0.0000	17.0033

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	12.08	0.00	0.00	15,704	15,704
Total	12.08	0.00	0.00	15,704	15,704

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	6.70	5.00	8.90	0.00	100.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	121.3366	121.3366	2.7700e-003	5.7000e-004	121.5766
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	121.3366	121.3366	2.7700e-003	5.7000e-004	121.5766
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	210482	121.3366	2.7700e-003	5.7000e-004	121.5766
Total		**121.3366**	**2.7700e-003**	**5.7000e-004**	**121.5766**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	210482	121.3366	2.7700e-003	5.7000e-004	121.5766
Total		**121.3366**	**2.7700e-003**	**5.7000e-004**	**121.5766**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.1000e-004	5.0000e-005	5.5500e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0108	0.0108	3.0000e-005	0.0000	0.0115
Unmitigated	5.1000e-004	5.0000e-005	5.5500e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0108	0.0108	3.0000e-005	0.0000	0.0115

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.1000e-004	5.0000e-005	5.5500e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0108	0.0108	3.0000e-005	0.0000	0.0115
Total	**5.1000e-004**	**5.0000e-005**	**5.5500e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0108**	**0.0108**	**3.0000e-005**	**0.0000**	**0.0115**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.1000e-004	5.0000e-005	5.5500e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0108	0.0108	3.0000e-005	0.0000	0.0115
Total	**5.1000e-004**	**5.0000e-005**	**5.5500e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0108**	**0.0108**	**3.0000e-005**	**0.0000**	**0.0115**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	20.8695	4.8000e-004	1.0000e-004	20.9107
Unmitigated	20.8695	4.8000e-004	1.0000e-004	20.9107

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 3.25852	20.8695	4.8000e-004	1.0000e-004	20.9107
Total		**20.8695**	**4.8000e-004**	**1.0000e-004**	**20.9107**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 3.25852	20.8695	4.8000e-004	1.0000e-004	20.9107
Total		**20.8695**	**4.8000e-004**	**1.0000e-004**	**20.9107**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Off-Highway Trucks	1	8.00	4	402	0.38	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Off-Highway Trucks	1.0100e-003	7.1400e-003	6.5800e-003	3.0000e-005		2.6000e-004	2.6000e-004		2.4000e-004	2.4000e-004	0.0000	2.3222	2.3222	7.5000e-004	0.0000	2.3410
Total	**1.0100e-003**	**7.1400e-003**	**6.5800e-003**	**3.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**2.3222**	**2.3222**	**7.5000e-004**	**0.0000**	**2.3410**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Viking Solar Project

Imperial County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	604.00	User Defined Unit	604.00	26,310,240.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2023
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	1270.9	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 604 acres

Construction Phase - Construction duration approximately 12 months

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Trips and VMT - Max worker trips 180
Max vendor trips 2
Max haul trips 3

On-road Fugitive Dust - Approximately 0.3 miles of unpaved roads

Grading - Approx. 1 pass over the 604 acres during site prep
Approx. 4 passes over the 604 acres during grading

Vehicle Trips - No employees would be based at the Project sites
Up to 2 washings per year - Max 12 one way trips per washing visit

Road Dust - Approx 0.3 miles of unpaved road to project

Consumer Products - none

Area Coating - none

Energy Use - 500 kw-hr/day

Water And Wastewater - 10 acre-feet=3258516.48 gallons

Solid Waste - none

Construction Off-road Equipment Mitigation - Reduced speed

Operational Off-Road Equipment - Assume 2 solar panel washing per year each taking two days

Fleet Mix - Conservatively assume a medium heavy duty truck

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	13155100	0
tblAreaCoating	Area_Nonresidential_Interior	39465300	0

Viking Solar Project - Imperial County, Summer

tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	25
tblConstructionPhase	NumDays	420.00	26.00
tblConstructionPhase	NumDays	1,085.00	44.00
tblConstructionPhase	NumDays	10,850.00	27.00
tblConstructionPhase	NumDays	10,850.00	16.00
tblConstructionPhase	NumDays	10,850.00	243.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblEnergyUse	T24E	0.00	8.0000e-003
tblFleetMix	HHD	0.12	0.00
tblFleetMix	LDA	0.52	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.16	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.8190e-003	0.00
tblFleetMix	MCY	5.2400e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	6.2400e-004	0.00
tblFleetMix	MHD	0.02	1.00
tblFleetMix	OBUS	3.5530e-003	0.00
tblFleetMix	SBUS	7.2900e-004	0.00
tblFleetMix	UBUS	1.2350e-003	0.00
tblGrading	AcresOfGrading	88.00	2,416.00

tblGrading	AcresOfGrading	26.00	604.00
tblLandUse	LandUseSquareFeet	0.00	26,310,240.00
tblLandUse	LotAcreage	0.00	604.00
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	PhaseName		Demolition/Site Preparation
tblOffRoadEquipment	PhaseName		Demolition/Site Preparation
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOnRoadDust	HaulingPercentPave	50.00	99.00
tblOnRoadDust	HaulingPercentPave	50.00	99.00

tblOnRoadDust	HaulingPercentPave	50.00	99.00
tblOnRoadDust	HaulingPercentPave	50.00	99.00
tblOnRoadDust	HaulingPercentPave	50.00	99.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	4.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblRoadDust	RoadPercentPave	50	96
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	3.00
tblTripsAndVMT	HaulingTripNumber	0.00	3.00
tblTripsAndVMT	HaulingTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	4,312.00	0.00
tblTripsAndVMT	VendorTripNumber	4,312.00	0.00
tblTripsAndVMT	VendorTripNumber	4,312.00	2.00
tblTripsAndVMT	WorkerTripNumber	15.00	180.00

tblTripsAndVMT	WorkerTripNumber	18.00	180.00
tblTripsAndVMT	WorkerTripNumber	11,050.00	0.00
tblTripsAndVMT	WorkerTripNumber	11,050.00	0.00
tblTripsAndVMT	WorkerTripNumber	11,050.00	180.00
tblVehicleTrips	CC_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	0.02
tblWater	OutdoorWaterUseRate	0.00	3,258,516.48

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	7.4783	60.0961	67.0130	0.1193	143.3932	2.9940	146.1607	17.6587	2.8168	20.2335	0.0000	11,404.6108	11,404.6108	2.6486	0.0000	11,470.1330
Maximum	**7.4783**	**60.0961**	**67.0130**	**0.1193**	**143.3932**	**2.9940**	**146.1607**	**17.6587**	**2.8168**	**20.2335**	**0.0000**	**11,404.6108**	**11,404.6108**	**2.6486**	**0.0000**	**11,470.1330**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	7.4783	60.0961	67.0130	0.1193	87.8250	2.9940	90.5925	10.1667	2.8168	12.7414	0.0000	11,404.6108	11,404.6108	2.6486	0.0000	11,470.1330
Maximum	**7.4783**	**60.0961**	**67.0130**	**0.1193**	**87.8250**	**2.9940**	**90.5925**	**10.1667**	**2.8168**	**12.7414**	**0.0000**	**11,404.6108**	**11,404.6108**	**2.6486**	**0.0000**	**11,470.1330**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**38.75**	**0.00**	**38.02**	**42.43**	**0.00**	**37.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0249	0.3737	0.2988	1.3900e-003	1.8554	4.1000e-004	1.8558	0.1963	3.9000e-004	0.1967		144.4809	144.4809	3.3800e-003		144.5654
Offroad	0.5039	3.5679	3.2885	0.0132		0.1290	0.1290		0.1187	0.1187		1,279.8885	1,279.8885	0.4139		1,290.2371
Total	**0.5345**	**3.9421**	**3.6489**	**0.0146**	**1.8554**	**0.1296**	**1.9851**	**0.1963**	**0.1193**	**0.3156**		**1,424.5016**	**1,424.5016**	**0.4177**	**0.0000**	**1,434.9433**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0249	0.3737	0.2988	1.3900e-003	1.8554	4.1000e-004	1.8558	0.1963	3.9000e-004	0.1967		144.4809	144.4809	3.3800e-003		144.5654
Offroad	0.5039	3.5679	3.2885	0.0132		0.1290	0.1290		0.1187	0.1187		1,279.8885	1,279.8885	0.4139		1,290.2371
Total	**0.5345**	**3.9421**	**3.6489**	**0.0146**	**1.8554**	**0.1296**	**1.9851**	**0.1963**	**0.1193**	**0.3156**		**1,424.5016**	**1,424.5016**	**0.4177**	**0.0000**	**1,434.9433**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition/Site Preparation	Site Preparation	1/1/2022	1/31/2022	6	26	
2	Grading	Grading	2/1/2022	3/23/2022	6	44	
3	Trenching	Building Construction	3/1/2022	3/31/2022	6	27	
4	Interconnection Connection	Building Construction	3/24/2022	4/11/2022	6	16	
5	Solar Array Installation	Building Construction	3/24/2022	12/31/2022	6	243	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 2416

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition/Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Demolition/Site Preparation	Scrapers	1	8.00	367	0.48
Demolition/Site Preparation	Skid Steer Loaders	1	8.00	65	0.37
Demolition/Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	2	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Trenching	Generator Sets	2	8.00	84	0.74

Interconnection Connection	Aerial Lifts	1	6.00	63	0.31
Trenching	Other General Industrial Equipment	1	8.00	88	0.34
Trenching	Skid Steer Loaders	1	8.00	65	0.37
Trenching	Trenchers	2	8.00	78	0.50
Trenching	Cranes	1	7.00	231	0.29
Interconnection Connection	Cranes	1	6.00	231	0.29
Interconnection Connection	Forklifts	1	4.00	89	0.20
Interconnection Connection	Other General Industrial Equipment	1	8.00	88	0.34
Interconnection Connection	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Interconnection Connection	Welders	1	8.00	46	0.45
Solar Array Installation	Bore/Drill Rigs	2	4.00	221	0.50
Solar Array Installation	Forklifts	5	4.00	89	0.20
Solar Array Installation	Generator Sets	1	8.00	84	0.74
Solar Array Installation	Off-Highway Trucks	1	6.00	402	0.38
Solar Array Installation	Skid Steer Loaders	2	8.00	65	0.37
Solar Array Installation	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Solar Array Installation	Cranes	1	7.00	231	0.29
Trenching	Forklifts	3	8.00	89	0.20
Interconnection Connection	Generator Sets	1	8.00	84	0.74
Trenching	Welders	1	8.00	46	0.45
Trenching	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Solar Array Installation	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition/Site Preparation	6	180.00	2.00	3.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	7	180.00	2.00	3.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	12	0.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Interconnection Connection	8	0.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Solar Array Installation	16	180.00	2.00	3.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition/Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					36.6804	0.0000	36.6804	9.2806	0.0000	9.2806			0.0000			0.0000
Off-Road	2.8925	30.8107	19.4029	0.0405		1.3986	1.3986		1.2867	1.2867		3,927.2338	3,927.2338	1.2702		3,958.9874
Total	**2.8925**	**30.8107**	**19.4029**	**0.0405**	**36.6804**	**1.3986**	**38.0790**	**9.2806**	**1.2867**	**10.5673**		**3,927.2338**	**3,927.2338**	**1.2702**		**3,958.9874**

3.2 Demolition/Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.4000e-004	0.0222	3.1100e-003	9.0000e-005	0.0360	6.0000e-005	0.0360	3.9400e-003	6.0000e-005	4.0000e-003		9.2611	9.2611	3.4000e-004		9.2695
Vendor	7.2500e-003	0.1922	0.0500	6.4000e-004	0.8020	4.4000e-004	0.8025	0.0831	4.2000e-004	0.0835		67.1135	67.1135	3.1600e-003		67.1925
Worker	1.0859	0.6504	7.6750	9.5900e-003	78.3167	6.2800e-003	78.3230	7.9755	5.7800e-003	7.9813		948.1898	948.1898	0.0723		949.9982
Total	**1.0936**	**0.8648**	**7.7281**	**0.0103**	**79.1547**	**6.7800e-003**	**79.1615**	**8.0625**	**6.2600e-003**	**8.0688**		**1,024.5645**	**1,024.5645**	**0.0758**		**1,026.4602**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.3054	0.0000	14.3054	3.6194	0.0000	3.6194			0.0000			0.0000
Off-Road	2.8925	30.8107	19.4029	0.0405		1.3986	1.3986		1.2867	1.2867	0.0000	3,927.2338	3,927.2338	1.2702		3,958.9874
Total	**2.8925**	**30.8107**	**19.4029**	**0.0405**	**14.3054**	**1.3986**	**15.7040**	**3.6194**	**1.2867**	**4.9061**	**0.0000**	**3,927.2338**	**3,927.2338**	**1.2702**		**3,958.9874**

3.2 Demolition/Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.4000e-004	0.0222	3.1100e-003	9.0000e-005	0.0289	6.0000e-005	0.0289	3.2300e-003	6.0000e-005	3.2900e-003		9.2611	9.2611	3.4000e-004		9.2695
Vendor	7.2500e-003	0.1922	0.0500	6.4000e-004	0.6374	4.4000e-004	0.6379	0.0666	4.2000e-004	0.0671		67.1135	67.1135	3.1600e-003		67.1925
Worker	1.0859	0.6504	7.6750	9.5900e-003	62.1118	6.2800e-003	62.1181	6.3550	5.7800e-003	6.3608		948.1898	948.1898	0.0723		949.9982
Total	**1.0936**	**0.8648**	**7.7281**	**0.0103**	**62.7780**	**6.7800e-003**	**62.7848**	**6.4249**	**6.2600e-003**	**6.4311**		**1,024.5645**	**1,024.5645**	**0.0758**		**1,026.4602**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					64.2532	0.0000	64.2532	9.5978	0.0000	9.5978			0.0000			0.0000
Off-Road	3.2995	34.8808	21.1341	0.0569		1.3778	1.3778		1.2676	1.2676		5,509.5072	5,509.5072	1.7819		5,554.0543
Total	**3.2995**	**34.8808**	**21.1341**	**0.0569**	**64.2532**	**1.3778**	**65.6310**	**9.5978**	**1.2676**	**10.8654**		**5,509.5072**	**5,509.5072**	**1.7819**		**5,554.0543**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.2000e-004	0.0131	1.8400e-003	5.0000e-005	0.0213	4.0000e-005	0.0213	2.3300e-003	4.0000e-005	2.3600e-003		5.4725	5.4725	2.0000e-004		5.4774
Vendor	7.2500e-003	0.1922	0.0500	6.4000e-004	0.8020	4.4000e-004	0.8025	0.0831	4.2000e-004	0.0835		67.1135	67.1135	3.1600e-003		67.1925
Worker	1.0859	0.6504	7.6750	9.5900e-003	78.3167	6.2800e-003	78.3230	7.9755	5.7800e-003	7.9813		948.1898	948.1898	0.0723		949.9982
Total	**1.0934**	**0.8557**	**7.7268**	**0.0103**	**79.1400**	**6.7600e-003**	**79.1468**	**8.0609**	**6.2400e-003**	**8.0671**		**1,020.7758**	**1,020.7758**	**0.0757**		**1,022.6682**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					25.0588	0.0000	25.0588	3.7432	0.0000	3.7432			0.0000			0.0000
Off-Road	3.2995	34.8808	21.1341	0.0569		1.3778	1.3778		1.2676	1.2676	0.0000	5,509.5072	5,509.5072	1.7819		5,554.0543
Total	**3.2995**	**34.8808**	**21.1341**	**0.0569**	**25.0588**	**1.3778**	**26.4366**	**3.7432**	**1.2676**	**5.0108**	**0.0000**	**5,509.5072**	**5,509.5072**	**1.7819**		**5,554.0543**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.2000e-004	0.0131	1.8400e-003	5.0000e-005	0.0171	4.0000e-005	0.0171	1.9100e-003	4.0000e-005	1.9400e-003		5.4725	5.4725	2.0000e-004		5.4774
Vendor	7.2500e-003	0.1922	0.0500	6.4000e-004	0.6374	4.4000e-004	0.6379	0.0666	4.2000e-004	0.0671		67.1135	67.1135	3.1600e-003		67.1925
Worker	1.0859	0.6504	7.6750	9.5900e-003	62.1118	6.2800e-003	62.1181	6.3550	5.7800e-003	6.3608		948.1898	948.1898	0.0723		949.9982
Total	**1.0934**	**0.8557**	**7.7268**	**0.0103**	**62.7662**	**6.7600e-003**	**62.7730**	**6.4235**	**6.2400e-003**	**6.4298**		**1,020.7758**	**1,020.7758**	**0.0757**		**1,022.6682**

3.4 Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6623	24.3596	23.8046	0.0383		1.3829	1.3829		1.3009	1.3009		3,639.5437	3,639.5437	0.7910		3,659.3192
Total	**2.6623**	**24.3596**	**23.8046**	**0.0383**		**1.3829**	**1.3829**		**1.3009**	**1.3009**		**3,639.5437**	**3,639.5437**	**0.7910**		**3,659.3192**

3.4 Trenching - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6623	24.3596	23.8046	0.0383		1.3829	1.3829		1.3009	1.3009	0.0000	3,639.5437	3,639.5437	0.7910		3,659.3192
Total	**2.6623**	**24.3596**	**23.8046**	**0.0383**		**1.3829**	**1.3829**		**1.3009**	**1.3009**	**0.0000**	**3,639.5437**	**3,639.5437**	**0.7910**		**3,659.3192**

3.4 Trenching - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.5 Interconnection Connection - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3138	11.8411	12.3620	0.0212		0.5790	0.5790		0.5496	0.5496		1,994.8725	1,994.8725	0.4310		2,005.6476
Total	**1.3138**	**11.8411**	**12.3620**	**0.0212**		**0.5790**	**0.5790**		**0.5496**	**0.5496**		**1,994.8725**	**1,994.8725**	**0.4310**		**2,005.6476**

3.5 Interconnection Connection - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3138	11.8411	12.3620	0.0212		0.5790	0.5790		0.5496	0.5496	0.0000	1,994.8725	1,994.8725	0.4310		2,005.6476
Total	**1.3138**	**11.8411**	**12.3620**	**0.0212**		**0.5790**	**0.5790**		**0.5496**	**0.5496**	**0.0000**	**1,994.8725**	**1,994.8725**	**0.4310**		**2,005.6476**

3.5 Interconnection Connection - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.6 Solar Array Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4091	22.2221	23.1211	0.0497		1.0253	1.0253		0.9602	0.9602		4,753.9005	4,753.9005	1.3233		4,786.9837
Total	**2.4091**	**22.2221**	**23.1211**	**0.0497**		**1.0253**	**1.0253**		**0.9602**	**0.9602**		**4,753.9005**	**4,753.9005**	**1.3233**		**4,786.9837**

3.6 Solar Array Installation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.0000e-005	2.3800e-003	3.3000e-004	1.0000e-005	3.8500e-003	1.0000e-005	3.8600e-003	4.2000e-004	1.0000e-005	4.3000e-004		0.9909	0.9909	4.0000e-005		0.9918
Vendor	7.2500e-003	0.1922	0.0500	6.4000e-004	0.8020	4.4000e-004	0.8025	0.0831	4.2000e-004	0.0835		67.1135	67.1135	3.1600e-003		67.1925
Worker	1.0859	0.6504	7.6750	9.5900e-003	78.3167	6.2800e-003	78.3230	7.9755	5.7800e-003	7.9813		948.1898	948.1898	0.0723		949.9982
Total	**1.0932**	**0.8449**	**7.7253**	**0.0102**	**79.1226**	**6.7300e-003**	**79.1293**	**8.0590**	**6.2100e-003**	**8.0652**		**1,016.2942**	**1,016.2942**	**0.0755**		**1,018.1825**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4091	22.2221	23.1211	0.0497		1.0253	1.0253		0.9602	0.9602	0.0000	4,753.9005	4,753.9005	1.3233		4,786.9837
Total	**2.4091**	**22.2221**	**23.1211**	**0.0497**		**1.0253**	**1.0253**		**0.9602**	**0.9602**	**0.0000**	**4,753.9005**	**4,753.9005**	**1.3233**		**4,786.9837**

3.6 Solar Array Installation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.0000e-005	2.3800e-003	3.3000e-004	1.0000e-005	3.0900e-003	1.0000e-005	3.0900e-003	3.5000e-004	1.0000e-005	3.5000e-004		0.9909	0.9909	4.0000e-005		0.9918
Vendor	7.2500e-003	0.1922	0.0500	6.4000e-004	0.6374	4.4000e-004	0.6379	0.0666	4.2000e-004	0.0671		67.1135	67.1135	3.1600e-003		67.1925
Worker	1.0859	0.6504	7.6750	9.5900e-003	62.1118	6.2800e-003	62.1181	6.3550	5.7800e-003	6.3608		948.1898	948.1898	0.0723		949.9982
Total	**1.0932**	**0.8449**	**7.7253**	**0.0102**	**62.7523**	**6.7300e-003**	**62.7590**	**6.4220**	**6.2100e-003**	**6.4282**		**1,016.2942**	**1,016.2942**	**0.0755**		**1,018.1825**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0249	0.3737	0.2988	1.3900e-003	1.8554	4.1000e-004	1.8558	0.1963	3.9000e-004	0.1967		144.4809	144.4809	3.3800e-003		144.5654
Unmitigated	0.0249	0.3737	0.2988	1.3900e-003	1.8554	4.1000e-004	1.8558	0.1963	3.9000e-004	0.1967		144.4809	144.4809	3.3800e-003		144.5654

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	12.08	0.00	0.00	15,704	15,704
Total	12.08	0.00	0.00	15,704	15,704

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	6.70	5.00	8.90	0.00	100.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409
Unmitigated	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409
Total	**5.7100e-003**	**5.6000e-004**	**0.0617**	**0.0000**		**2.2000e-004**	**2.2000e-004**		**2.2000e-004**	**2.2000e-004**		**0.1322**	**0.1322**	**3.5000e-004**		**0.1409**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409
Total	**5.7100e-003**	**5.6000e-004**	**0.0617**	**0.0000**		**2.2000e-004**	**2.2000e-004**		**2.2000e-004**	**2.2000e-004**		**0.1322**	**0.1322**	**3.5000e-004**		**0.1409**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Off-Highway Trucks	1	8.00	4	402	0.38	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Off-Highway Trucks	0.5039	3.5679	3.2885	0.0132		0.1290	0.1290		0.1187	0.1187		1,279.8885	1,279.8885	0.4139		1,290.2371
Total	**0.5039**	**3.5679**	**3.2885**	**0.0132**		**0.1290**	**0.1290**		**0.1187**	**0.1187**		**1,279.8885**	**1,279.8885**	**0.4139**		**1,290.2371**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Viking Solar Project

Imperial County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	604.00	User Defined Unit	604.00	26,310,240.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2023
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	1270.9	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project area is approximately 604 acres

Construction Phase - Construction duration approximately 12 months

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Off-road Equipment - Equipment details

Trips and VMT - Max worker trips 180
Max vendor trips 2
Max haul trips 3

On-road Fugitive Dust - Approximately 0.3 miles of unpaved roads

Grading - Approx. 1 pass over the 604 acres during site prep
Approx. 4 passes over the 604 acres during grading

Vehicle Trips - No employees would be based at the Project sites
Up to 2 washings per year - Max 12 one way trips per washing visit

Road Dust - Approx 0.3 miles of unpaved road to project

Consumer Products - none

Area Coating - none

Energy Use - 500 kw-hr/day

Water And Wastewater - 10 acre-feet=3258516.48 gallons

Solid Waste - none

Construction Off-road Equipment Mitigation - Reduced speed

Operational Off-Road Equipment - Assume 2 solar panel washing per year each taking two days

Fleet Mix - Conservatively assume a medium heavy duty truck

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	13155100	0
tblAreaCoating	Area_Nonresidential_Interior	39465300	0

Viking Solar Project - Imperial County, Winter

tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	25
tblConstructionPhase	NumDays	420.00	26.00
tblConstructionPhase	NumDays	1,085.00	44.00
tblConstructionPhase	NumDays	10,850.00	27.00
tblConstructionPhase	NumDays	10,850.00	16.00
tblConstructionPhase	NumDays	10,850.00	243.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblEnergyUse	T24E	0.00	8.0000e-003
tblFleetMix	HHD	0.12	0.00
tblFleetMix	LDA	0.52	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.16	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.8190e-003	0.00
tblFleetMix	MCY	5.2400e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	6.2400e-004	0.00
tblFleetMix	MHD	0.02	1.00
tblFleetMix	OBUS	3.5530e-003	0.00
tblFleetMix	SBUS	7.2900e-004	0.00
tblFleetMix	UBUS	1.2350e-003	0.00
tblGrading	AcresOfGrading	88.00	2,416.00

tblGrading	AcresOfGrading	26.00	604.00
tblLandUse	LandUseSquareFeet	0.00	26,310,240.00
tblLandUse	LotAcreage	0.00	604.00
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	PhaseName		Demolition/Site Preparation
tblOffRoadEquipment	PhaseName		Demolition/Site Preparation
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOnRoadDust	HaulingPercentPave	50.00	99.00
tblOnRoadDust	HaulingPercentPave	50.00	99.00

tblOnRoadDust	HaulingPercentPave	50.00	99.00
tblOnRoadDust	HaulingPercentPave	50.00	99.00
tblOnRoadDust	HaulingPercentPave	50.00	99.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	VendorPercentPave	50.00	97.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOnRoadDust	WorkerPercentPave	50.00	96.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	4.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblRoadDust	RoadPercentPave	50	96
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	3.00
tblTripsAndVMT	HaulingTripNumber	0.00	3.00
tblTripsAndVMT	HaulingTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	4,312.00	0.00
tblTripsAndVMT	VendorTripNumber	4,312.00	0.00
tblTripsAndVMT	VendorTripNumber	4,312.00	2.00
tblTripsAndVMT	WorkerTripNumber	15.00	180.00

tblTripsAndVMT	WorkerTripNumber	18.00	180.00
tblTripsAndVMT	WorkerTripNumber	11,050.00	0.00
tblTripsAndVMT	WorkerTripNumber	11,050.00	0.00
tblTripsAndVMT	WorkerTripNumber	11,050.00	180.00
tblVehicleTrips	CC_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	0.02
tblWater	OutdoorWaterUseRate	0.00	3,258,516.48

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	7.2727	60.1278	65.1238	0.1178	143.3932	2.9940	146.1607	17.6587	2.8168	20.2335	0.0000	11,249.1898	11,249.1898	2.6354	0.0000	11,314.3822
Maximum	**7.2727**	**60.1278**	**65.1238**	**0.1178**	**143.3932**	**2.9940**	**146.1607**	**17.6587**	**2.8168**	**20.2335**	**0.0000**	**11,249.1898**	**11,249.1898**	**2.6354**	**0.0000**	**11,314.3822**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	7.2727	60.1278	65.1238	0.1178	87.8250	2.9940	90.5925	10.1667	2.8168	12.7414	0.0000	11,249.1898	11,249.1898	2.6354	0.0000	11,314.3822
Maximum	**7.2727**	**60.1278**	**65.1238**	**0.1178**	**87.8250**	**2.9940**	**90.5925**	**10.1667**	**2.8168**	**12.7414**	**0.0000**	**11,249.1898**	**11,249.1898**	**2.6354**	**0.0000**	**11,314.3822**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**38.75**	**0.00**	**38.02**	**42.43**	**0.00**	**37.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0247	0.3848	0.3261	1.3900e-003	1.8554	4.1000e-004	1.8558	0.1963	3.9000e-004	0.1967		143.9581	143.9581	3.5800e-003		144.0475
Offroad	0.5039	3.5679	3.2885	0.0132		0.1290	0.1290		0.1187	0.1187		1,279.8885	1,279.8885	0.4139		1,290.2371
Total	**0.5343**	**3.9533**	**3.6762**	**0.0146**	**1.8554**	**0.1296**	**1.9851**	**0.1963**	**0.1193**	**0.3156**		**1,423.9788**	**1,423.9788**	**0.4179**	**0.0000**	**1,434.4254**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0247	0.3848	0.3261	1.3900e-003	1.8554	4.1000e-004	1.8558	0.1963	3.9000e-004	0.1967		143.9581	143.9581	3.5800e-003		144.0475
Offroad	0.5039	3.5679	3.2885	0.0132		0.1290	0.1290		0.1187	0.1187		1,279.8885	1,279.8885	0.4139		1,290.2371
Total	**0.5343**	**3.9533**	**3.6762**	**0.0146**	**1.8554**	**0.1296**	**1.9851**	**0.1963**	**0.1193**	**0.3156**		**1,423.9788**	**1,423.9788**	**0.4179**	**0.0000**	**1,434.4254**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition/Site Preparation	Site Preparation	1/1/2022	1/31/2022	6	26	
2	Grading	Grading	2/1/2022	3/23/2022	6	44	
3	Trenching	Building Construction	3/1/2022	3/31/2022	6	27	
4	Interconnection Connection	Building Construction	3/24/2022	4/11/2022	6	16	
5	Solar Array Installation	Building Construction	3/24/2022	12/31/2022	6	243	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 2416

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition/Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Demolition/Site Preparation	Scrapers	1	8.00	367	0.48
Demolition/Site Preparation	Skid Steer Loaders	1	8.00	65	0.37
Demolition/Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	2	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Trenching	Generator Sets	2	8.00	84	0.74

Interconnection Connection	Aerial Lifts	1	6.00	63	0.31
Trenching	Other General Industrial Equipment	1	8.00	88	0.34
Trenching	Skid Steer Loaders	1	8.00	65	0.37
Trenching	Trenchers	2	8.00	78	0.50
Trenching	Cranes	1	7.00	231	0.29
Interconnection Connection	Cranes	1	6.00	231	0.29
Interconnection Connection	Forklifts	1	4.00	89	0.20
Interconnection Connection	Other General Industrial Equipment	1	8.00	88	0.34
Interconnection Connection	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Interconnection Connection	Welders	1	8.00	46	0.45
Solar Array Installation	Bore/Drill Rigs	2	4.00	221	0.50
Solar Array Installation	Forklifts	5	4.00	89	0.20
Solar Array Installation	Generator Sets	1	8.00	84	0.74
Solar Array Installation	Off-Highway Trucks	1	6.00	402	0.38
Solar Array Installation	Skid Steer Loaders	2	8.00	65	0.37
Solar Array Installation	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Solar Array Installation	Cranes	1	7.00	231	0.29
Trenching	Forklifts	3	8.00	89	0.20
Interconnection Connection	Generator Sets	1	8.00	84	0.74
Trenching	Welders	1	8.00	46	0.45
Trenching	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Solar Array Installation	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition/Site Preparation	6	180.00	2.00	3.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	7	180.00	2.00	3.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	12	0.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Interconnection Connection	8	0.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Solar Array Installation	16	180.00	2.00	3.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition/Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					36.6804	0.0000	36.6804	9.2806	0.0000	9.2806			0.0000			0.0000
Off-Road	2.8925	30.8107	19.4029	0.0405		1.3986	1.3986		1.2867	1.2867		3,927.2338	3,927.2338	1.2702		3,958.9874
Total	**2.8925**	**30.8107**	**19.4029**	**0.0405**	**36.6804**	**1.3986**	**38.0790**	**9.2806**	**1.2867**	**10.5673**		**3,927.2338**	**3,927.2338**	**1.2702**		**3,958.9874**

3.2 Demolition/Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.7000e-004	0.0227	3.7500e-003	9.0000e-005	0.0360	6.0000e-005	0.0360	3.9400e-003	6.0000e-005	4.0000e-003		8.9859	8.9859	3.8000e-004		8.9953
Vendor	7.5500e-003	0.1938	0.0579	6.2000e-004	0.8020	4.6000e-004	0.8025	0.0831	4.4000e-004	0.0835		64.6836	64.6836	3.5400e-003		64.7720
Worker	0.8800	0.6801	5.7779	8.0400e-003	78.3167	6.2800e-003	78.3230	7.9755	5.7800e-003	7.9813		795.2282	795.2282	0.0588		796.6972
Total	**0.8881**	**0.8967**	**5.8395**	**8.7500e-003**	**79.1547**	**6.8000e-003**	**79.1615**	**8.0625**	**6.2800e-003**	**8.0688**		**868.8976**	**868.8976**	**0.0627**		**870.4645**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.3054	0.0000	14.3054	3.6194	0.0000	3.6194			0.0000			0.0000
Off-Road	2.8925	30.8107	19.4029	0.0405		1.3986	1.3986		1.2867	1.2867	0.0000	3,927.2338	3,927.2338	1.2702		3,958.9874
Total	**2.8925**	**30.8107**	**19.4029**	**0.0405**	**14.3054**	**1.3986**	**15.7040**	**3.6194**	**1.2867**	**4.9061**	**0.0000**	**3,927.2338**	**3,927.2338**	**1.2702**		**3,958.9874**

3.2 Demolition/Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.7000e-004	0.0227	3.7500e-003	9.0000e-005	0.0289	6.0000e-005	0.0289	3.2300e-003	6.0000e-005	3.2900e-003		8.9859	8.9859	3.8000e-004		8.9953
Vendor	7.5500e-003	0.1938	0.0579	6.2000e-004	0.6374	4.6000e-004	0.6379	0.0666	4.4000e-004	0.0671		64.6836	64.6836	3.5400e-003		64.7720
Worker	0.8800	0.6801	5.7779	8.0400e-003	62.1118	6.2800e-003	62.1181	6.3550	5.7800e-003	6.3608		795.2282	795.2282	0.0588		796.6972
Total	**0.8881**	**0.8967**	**5.8395**	**8.7500e-003**	**62.7780**	**6.8000e-003**	**62.7848**	**6.4249**	**6.2800e-003**	**6.4311**		**868.8976**	**868.8976**	**0.0627**		**870.4645**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					64.2532	0.0000	64.2532	9.5978	0.0000	9.5978			0.0000			0.0000
Off-Road	3.2995	34.8808	21.1341	0.0569		1.3778	1.3778		1.2676	1.2676		5,509.5072	5,509.5072	1.7819		5,554.0543
Total	**3.2995**	**34.8808**	**21.1341**	**0.0569**	**64.2532**	**1.3778**	**65.6310**	**9.5978**	**1.2676**	**10.8654**		**5,509.5072**	**5,509.5072**	**1.7819**		**5,554.0543**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.4000e-004	0.0134	2.2100e-003	5.0000e-005	0.0213	4.0000e-005	0.0213	2.3300e-003	4.0000e-005	2.3600e-003		5.3098	5.3098	2.2000e-004		5.3154
Vendor	7.5500e-003	0.1938	0.0579	6.2000e-004	0.8020	4.6000e-004	0.8025	0.0831	4.4000e-004	0.0835		64.6836	64.6836	3.5400e-003		64.7720
Worker	0.8800	0.6801	5.7779	8.0400e-003	78.3167	6.2800e-003	78.3230	7.9755	5.7800e-003	7.9813		795.2282	795.2282	0.0588		796.6972
Total	**0.8879**	**0.8874**	**5.8380**	**8.7100e-003**	**79.1400**	**6.7800e-003**	**79.1468**	**8.0609**	**6.2600e-003**	**8.0672**		**865.2216**	**865.2216**	**0.0625**		**866.7847**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					25.0588	0.0000	25.0588	3.7432	0.0000	3.7432			0.0000			0.0000
Off-Road	3.2995	34.8808	21.1341	0.0569		1.3778	1.3778		1.2676	1.2676	0.0000	5,509.5072	5,509.5072	1.7819		5,554.0543
Total	**3.2995**	**34.8808**	**21.1341**	**0.0569**	**25.0588**	**1.3778**	**26.4366**	**3.7432**	**1.2676**	**5.0108**	**0.0000**	**5,509.5072**	**5,509.5072**	**1.7819**		**5,554.0543**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.4000e-004	0.0134	2.2100e-003	5.0000e-005	0.0171	4.0000e-005	0.0171	1.9100e-003	4.0000e-005	1.9400e-003		5.3098	5.3098	2.2000e-004		5.3154
Vendor	7.5500e-003	0.1938	0.0579	6.2000e-004	0.6374	4.6000e-004	0.6379	0.0666	4.4000e-004	0.0671		64.6836	64.6836	3.5400e-003		64.7720
Worker	0.8800	0.6801	5.7779	8.0400e-003	62.1118	6.2800e-003	62.1181	6.3550	5.7800e-003	6.3608		795.2282	795.2282	0.0588		796.6972
Total	**0.8879**	**0.8874**	**5.8380**	**8.7100e-003**	**62.7662**	**6.7800e-003**	**62.7730**	**6.4235**	**6.2600e-003**	**6.4298**		**865.2216**	**865.2216**	**0.0625**		**866.7847**

3.4 Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6623	24.3596	23.8046	0.0383		1.3829	1.3829		1.3009	1.3009		3,639.5437	3,639.5437	0.7910		3,659.3192
Total	**2.6623**	**24.3596**	**23.8046**	**0.0383**		**1.3829**	**1.3829**		**1.3009**	**1.3009**		**3,639.5437**	**3,639.5437**	**0.7910**		**3,659.3192**

3.4 Trenching - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6623	24.3596	23.8046	0.0383		1.3829	1.3829		1.3009	1.3009	0.0000	3,639.5437	3,639.5437	0.7910		3,659.3192
Total	**2.6623**	**24.3596**	**23.8046**	**0.0383**		**1.3829**	**1.3829**		**1.3009**	**1.3009**	**0.0000**	**3,639.5437**	**3,639.5437**	**0.7910**		**3,659.3192**

3.4 Trenching - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.5 Interconnection Connection - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3138	11.8411	12.3620	0.0212		0.5790	0.5790		0.5496	0.5496		1,994.8725	1,994.8725	0.4310		2,005.6476
Total	**1.3138**	**11.8411**	**12.3620**	**0.0212**		**0.5790**	**0.5790**		**0.5496**	**0.5496**		**1,994.8725**	**1,994.8725**	**0.4310**		**2,005.6476**

3.5 Interconnection Connection - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3138	11.8411	12.3620	0.0212		0.5790	0.5790		0.5496	0.5496	0.0000	1,994.8725	1,994.8725	0.4310		2,005.6476
Total	**1.3138**	**11.8411**	**12.3620**	**0.0212**		**0.5790**	**0.5790**		**0.5496**	**0.5496**	**0.0000**	**1,994.8725**	**1,994.8725**	**0.4310**		**2,005.6476**

3.5 Interconnection Connection - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.6 Solar Array Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4091	22.2221	23.1211	0.0497		1.0253	1.0253		0.9602	0.9602		4,753.9005	4,753.9005	1.3233		4,786.9837
Total	**2.4091**	**22.2221**	**23.1211**	**0.0497**		**1.0253**	**1.0253**		**0.9602**	**0.9602**		**4,753.9005**	**4,753.9005**	**1.3233**		**4,786.9837**

3.6 Solar Array Installation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.0000e-005	2.4300e-003	4.0000e-004	1.0000e-005	3.8500e-003	1.0000e-005	3.8600e-003	4.2000e-004	1.0000e-005	4.3000e-004		0.9615	0.9615	4.0000e-005		0.9625
Vendor	7.5500e-003	0.1938	0.0579	6.2000e-004	0.8020	4.6000e-004	0.8025	0.0831	4.4000e-004	0.0835		64.6836	64.6836	3.5400e-003		64.7720
Worker	0.8800	0.6801	5.7779	8.0400e-003	78.3167	6.2800e-003	78.3230	7.9755	5.7800e-003	7.9813		795.2282	795.2282	0.0588		796.6972
Total	**0.8876**	**0.8764**	**5.8361**	**8.6700e-003**	**79.1226**	**6.7500e-003**	**79.1294**	**8.0590**	**6.2300e-003**	**8.0652**		**860.8732**	**860.8732**	**0.0623**		**862.4317**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4091	22.2221	23.1211	0.0497		1.0253	1.0253		0.9602	0.9602	0.0000	4,753.9005	4,753.9005	1.3233		4,786.9837
Total	**2.4091**	**22.2221**	**23.1211**	**0.0497**		**1.0253**	**1.0253**		**0.9602**	**0.9602**	**0.0000**	**4,753.9005**	**4,753.9005**	**1.3233**		**4,786.9837**

3.6 Solar Array Installation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.0000e-005	2.4300e-003	4.0000e-004	1.0000e-005	3.0900e-003	1.0000e-005	3.0900e-003	3.5000e-004	1.0000e-005	3.5000e-004		0.9615	0.9615	4.0000e-005		0.9625
Vendor	7.5500e-003	0.1938	0.0579	6.2000e-004	0.6374	4.6000e-004	0.6379	0.0666	4.4000e-004	0.0671		64.6836	64.6836	3.5400e-003		64.7720
Worker	0.8800	0.6801	5.7779	8.0400e-003	62.1118	6.2800e-003	62.1181	6.3550	5.7800e-003	6.3608		795.2282	795.2282	0.0588		796.6972
Total	**0.8876**	**0.8764**	**5.8361**	**8.6700e-003**	**62.7523**	**6.7500e-003**	**62.7590**	**6.4220**	**6.2300e-003**	**6.4282**		**860.8732**	**860.8732**	**0.0623**		**862.4317**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0247	0.3848	0.3261	1.3900e-003	1.8554	4.1000e-004	1.8558	0.1963	3.9000e-004	0.1967		143.9581	143.9581	3.5800e-003		144.0475
Unmitigated	0.0247	0.3848	0.3261	1.3900e-003	1.8554	4.1000e-004	1.8558	0.1963	3.9000e-004	0.1967		143.9581	143.9581	3.5800e-003		144.0475

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	12.08	0.00	0.00	15,704	15,704
Total	12.08	0.00	0.00	15,704	15,704

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	6.70	5.00	8.90	0.00	100.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409
Unmitigated	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409
Total	**5.7100e-003**	**5.6000e-004**	**0.0617**	**0.0000**		**2.2000e-004**	**2.2000e-004**		**2.2000e-004**	**2.2000e-004**		**0.1322**	**0.1322**	**3.5000e-004**		**0.1409**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.7100e-003	5.6000e-004	0.0617	0.0000		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004		0.1322	0.1322	3.5000e-004		0.1409
Total	**5.7100e-003**	**5.6000e-004**	**0.0617**	**0.0000**		**2.2000e-004**	**2.2000e-004**		**2.2000e-004**	**2.2000e-004**		**0.1322**	**0.1322**	**3.5000e-004**		**0.1409**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Off-Highway Trucks	1	8.00	4	402	0.38	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Off-Highway Trucks	0.5039	3.5679	3.2885	0.0132		0.1290	0.1290		0.1187	0.1187		1,279.8885	1,279.8885	0.4139		1,290.2371
Total	**0.5039**	**3.5679**	**3.2885**	**0.0132**		**0.1290**	**0.1290**		**0.1187**	**0.1187**		**1,279.8885**	**1,279.8885**	**0.4139**		**1,290.2371**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

AQUATIC RESOURCES DELINEATION REPORT

VIKINGS SOLAR ENERGY STORAGE PROJECT

IMPERIAL COUNTY, CALIFORNIA

JANUARY 2021

PREPARED FOR

Vikings Energy Farm, LLC

PREPARED BY

SWCA Environmental Consultants

AQUATIC RESOURCES DELINEATION REPORT FOR THE VIKINGS SOLAR ENERGY STORAGE PROJECT, IMPERIAL COUNTY, CALIFORNIA

Prepared for

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SWCA Project No. 64085

January 2021

CONTENTS

Appendices

Tables

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1 INTRODUCTION

This aquatic resources delineation report was prepared by SWCA Environmental Consultants (SWCA) for Vikings Energy Farm, LLC, for the Vikings Solar Energy Storage Project (Project). The Project site is located approximately 5.5 miles east of the city of Holtville on assessor's parcel numbers (APNs) 050-070-018-000 (approximately 480.00 acres), 050-070-019-000 (approximately 80.00 acres), and 050-070-021-000 (approximately 43.61 acres) in Imperial County, California. The approximate center of the Project site is located at coordinates 32.803209°N, 115.271484°W within Section 36, Township 15 South, Range 16 East, on the U.S. Geological Survey (USGS) Holtville East, California, 7.5-minute quadrangle (Appendix A, Figure A-1).

1.1 Project Description

Vikings Energy Farm, LLC, proposes to develop a nominal 150-megawatt (MW) alternating current solar photovoltaic energy generation project with an integrated 150-MW/600-MWh battery storage facility. Construction activities would primarily involve demolition and grubbing, grading to establish access roads and pads for electrical equipment (inverters and step-up transformers), trenching for underground electrical collection lines, and the installation of solar equipment and security fencing.

1.2 Environmental Setting

Current land use of APN 050-070-018-000 consists of actively farmed agricultural land in the northern and northwestern portions of the parcel, and fallow fields along the southern and eastern edges. Two separate irrigation holding ponds are located along the western parcel boundary (Unnamed Reservoirs 03 and 04) (Figure A-3). Most of APN 050-070-019-000 is undeveloped and not previously farmed, with vegetation dominated by upland desert species with the exception of riparian-dominated areas near the western canals. APN 050-070-021-000 is also primarily undeveloped and unfarmed with predominantly upland desert vegetation and riparian vegetation surrounding two small agricultural ponds along the southwestern parcel boundary. The upland vegetation cover type is the same as that found on APN 050-070-019-000.

The National Wetlands Inventory shows several mapped features on the Project site , including two freshwater ponds on APN 050-070-018, two freshwater emergent wetlands and one riverine feature on APN 050-070-021, and one freshwater forested/shrub wetland on the southeast corner of APN 050-070-019 (U.S. Fish and Wildlife Service [USFWS] 2021a).

2 Regulatory Overview

Activities within inland streams, wetlands, and riparian areas in California are regulated by agencies at the federal, state, and regional levels. At the federal level, the U.S. Army Corps of Engineers (USACE) Regulatory Program regulates activities within wetlands and waters of the U.S. pursuant to Section 404 of the federal Clean Water Act (CWA). At the state level, the CDFW regulates activities within the bed, bank, and associated habitat of a stream under the Fish and Game Code §§ 1600–1616. At the regional level, the California Regional Water Quality Control Board regulates discharge into waters of the U.S. under Section 401 of the federal CWA and waters of the State under the California Porter-Cologne Water Quality Act.

2.1 Clean Water Act – Section 404

Under provisions of the CWA, the USACE administers the day-to-day activities required by Section 404. These include the individual permit decisions, jurisdictional determinations, developing policy and guidance, and enforcing provisions of Section 404. Waters of the U.S. are defined in section 33 Code of Federal Regulations (CFR) 328.3, implementing the CWA, as follows:

328.3 - Definitions.

For the purpose of this regulation these terms are defined as follows:

(a) The term waters of the United States means:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) which are used or could be used for industrial purpose by industries in interstate commerce.

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;

(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

(8) Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with U.S. Environmental Protection Agency (EPA).

2.1.1 Supreme Court Decisions

2.1.1.1 SOLID WASTE AGENCY OF NORTH COOK COUNTY

On January 9, 2001, the Supreme Court of the United States issued a decision on *Solid Waste Agency of Northern Cook County* v. *United States Army Corps of Engineers* (*SWANCC*), et al. with respect to whether the USACE could assert jurisdiction over isolated waters. The *SWANCC* ruling stated that the USACE does not have jurisdiction over "non-navigable, isolated, intrastate" waters.

2.1.1.2 RAPANOS/CARABELL

In 2006, the Supreme Court addressed the jurisdictional scope of Section 404 of the CWA, specifically the term "the waters of the U.S.," in their consolidated decision in *Rapanos* v. *United States* and in *Carabell* v. *United States* (hereafter referred to as *Rapanos*), the purpose of which was to provide guidance on determining what constitutes "waters of the U.S."

The following is taken from the Jurisdictional Determination Form Instructional Guidebook publish in 2007:

> The Rapanos decision provides two new analytical standards for determining whether water bodies that are not traditional navigable waters (TNWs), including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction:
>
> if the water body is relatively permanent, or if the water body is a wetland that directly abuts (e.g., the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent water body (RPW), or
>
> if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with TNWs.

CWA jurisdiction over TNWs and their adjacent wetlands was not in question in *Rapanos*, and, therefore, was not affected by the *Rapanos* decision. In addition, at least five of the justices in *Rapanos* agreed that CWA jurisdiction exists over all TNWs and over all wetlands adjacent to TNWs. As a consequence of the U.S. Supreme Court decision in *Rapanos*, the EPA and the USACE in coordination with the Office of Management and Budget and the President's Council on Environmental Quality, developed the *Memorandum Regarding CWA Jurisdiction Following Rapanos v. United States* (USEPA 2008). This guidance requires the application of the two new standards described above, as well as a greater level of documentation, to support an agency jurisdictional determination for a particular water body. Furthermore, this guidance required the USACE and EPA to develop a revised jurisdictional delineation form to be used by field staff for documenting assertion or declination of CWA jurisdiction.

The memo states that the agencies will assert jurisdiction over the following categories of water bodies:

- TNWs;
- all wetlands adjacent to TNWs;
- non-navigable tributaries of TNWs that are relatively permanent (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally); and
- wetlands that directly abut such tributaries.

In addition, the agencies will assert jurisdiction over every water body that is not an RPW if that water body is determined (on the basis of a fact-specific analysis) to have a significant nexus with a TNW. The classes of water body that are subject to CWA jurisdiction only if such a significant nexus is demonstrated are:

- non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally;
- wetlands adjacent to such tributaries; and
- wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary.

A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological integrity of a TNW. Principal considerations when evaluating a significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands.

2.1.1.3 DEFINING THE SCOPE OF WATERS PROTECTED UNDER THE CLEAN WATER ACT

On April 21, 2020, the EPA and the USACE published (85 Fed. Reg. 77 [21 April 2020]) a rule (Navigable Waters Protection Rule) to finalize a revised definition of "waters of the United States" under the CWA. The agencies have clarified the definition so that it includes four categories of jurisdictional waters and provides exclusions for many water features that traditionally have not been regulated and defines terms in the regulatory text that have never been defined before. The Navigable Waters Protection Rule regulates the nation's navigable waters and the core tributary systems that provide perennial or intermittent flow into them.

The Navigable Waters Protection Rule is the second step in a two-step process to review and revise the definition of "waters of the United States" consistent with the February 2017 Presidential Executive Order entitled "Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States.'" This final rule became effective on June 22, 2020. On June 19, 2020, the District Court for the District of Colorado stayed the effective date of the Rule only in the State of Colorado. The rule is being implemented by EPA and USACE in all other states and jurisdictions.

Under the final Navigable Waters Protection Rule, four clear categories of waters are federally regulated:

- The territorial seas and traditional navigable waters,
- Perennial and intermittent tributaries to those waters,
- Certain lakes, ponds, and impoundments, and
- Wetlands adjacent to jurisdictional waters.

The final rule also details 12 categories of exclusions (i.e., features that are not "waters of the United States"), such as features that only contain water in direct response to rainfall (e.g., ephemeral features), groundwater, many ditches, prior converted cropland, and waste treatment systems.

2.2 Clean Water Act Section 401 and the California Porter-Cologne Water Quality Act

The California State Water Resources Control Board (SWRCB) and its Regional Water Quality Control Boards (RWQCBs) regulate discharge of waste in any region that could affect the waters of the State under the California Porter-Cologne Water Quality Act, or waters of the U.S. under Section 401 of the federal CWA. Under the Porter-Cologne Act, a Report of Waste Discharge must be submitted prior to discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State (California Water Code § 13260). Waste Discharge Requirements (WDRs) or a waiver of WDRs will then be issued by the RWQCB. Waters of the State are defined as "Any surface water or groundwater, including saline waters that are within the boundaries of the state" (California Water Code § 13050). This differs from the CWA definition of waters of the U.S. by its inclusion of groundwater and waters outside the ordinary high water mark in its jurisdiction.

Although all waters of the U.S. also fall under the category of waters of the State, some waters of the State may be identified beyond the delineation of waters of the U.S., and the RWQCB may exert authority to regulate waste discharge into these waters even if the waters do not fall under USACE federal jurisdiction. All projects that have a federal component and may affect waters of the U.S., including those that require a Section 404 Permit from the USACE, must also comply with Section 401 of the CWA. If

discharge into waters of the U.S. is proposed, a 401 Water Quality Certification from the RWQCB is required (23 California Code of Regulations (CCR) §§ 3830–3869) in addition to obtaining WDRs for impacts to waters of the State.

The federal CWA prohibits certain discharges of stormwater containing pollutants except in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit (33 United States Code [USC] §§ 1311 and 1342[p]; also referred to as CWA §§ 301 and 402[p]). The EPA promulgates federal regulations to implement the CWA's mandate to control pollutants in stormwater runoff discharges (40 CFR Parts 122, 123, and 124). The federal statutes and regulations require discharges to surface waters composed of stormwater associated with construction activity, including demolition, clearing, grading, and excavation, and other land disturbance activities (except operations that result in disturbance of less than one acre of total land area and that are not part of a larger common plan of development or sale), to obtain coverage under an NPDES Permit. The NPDES Permit must require implementation of best available technology economically achievable and best conventional pollutant control technology to reduce or eliminate pollutants in stormwater runoff. The NPDES Permit must also include additional requirements necessary to implement applicable water quality standards.

SWRCB may extend authority throughout the state to regulate waters with beneficial use as defined by SWRCB (California Water Code § 6659). RWQCB may have variations of these definitions that apply to specified RWQCBs throughout the state of California. Beneficial use definitions vary and may include waters that support habitat necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered (RARE).

2.3 California Fish and Game Code Sections 1600-1616: Streambeds, Banks and Riparian Habitats

The CDFW asserts jurisdiction over the bed and bank of a stream and associated wildlife and habitats as established in California Fish and Game Code (FGC) Sections 1600–1616. In accordance with Section 1602 of the FGC (Streambed Alteration), the CDFW regulates activities that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake" and requires notification prior to such activities. In addition, Section 1603 of the FGC states that "after the notification is complete, the department shall determine whether the activity may substantially adversely affect an existing fish and wildlife resource," and a Lake and Streambed Alteration Agreement may be pursued. These regulations were established to protect the wildlife resources that are associated with the riparian habitats that occur within and adjacent to ephemeral or year-round drainage systems. The CDFW jurisdiction area is often defined in practice as the top of bank of the stream or to the limit (outer dripline) of the adjacent riparian vegetation.

3 JURISDICTIONAL DELINEATION

3.1 Methods

A jurisdictional delineation was conducted by SWCA to determine the presence/absence and potential limits of jurisdictional resources. Prior to the field efforts, a literature review was conducted to determine the potential type of jurisdictional resources within the Project site.

3.1.1 Literature and Data Review

Relevant literature and materials were reviewed to preliminarily identify areas that may fall under agency jurisdiction. The following resources were reviewed or used prior to the field surveys:

- *Wetlands Delineation Manual* (U.S. Army Corps of Engineers [USACE] 1987)
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008)
- National Wetlands Inventory Wetland Geodatabase (USFWS 2021a)
- The National Wetland Plant List: 2016 Wetland Ratings (Lichvar et al. 2016)
- California Soil Resource Lab's Soil Web Google Earth interface (Natural Resources Conservation Service [NRCS] 2021)
- National Hydrography Dataset (USGS 2021)

3.1.2 Jurisdictional Delineation

SWCA wetland delineator, Malek Al-Marayati, and SWCA biologist, Marshall Webb, conducted the jurisdictional delineation survey on December 1 through 3, 2020, to determine potential jurisdictional resources under Section 404/401 of the Clean Water Act, Section 1600-1616 of the California Fish and Game Code, and the Porter-Cologne Water Quality Control Act. Current USACE delineation procedures and guidance were used to identify and delineate any wetlands or waters of the U.S. (WoUS) or both that may be subject to USACE and Regional Water Quality Control Board (RWQCB) jurisdiction (Lichvar et al. 2016; USACE 1987, 2008). Likewise, current California Department of Fish and Wildlife (CDFW) procedures and guidance were used to identify and delineate any streambeds, rivers, or associated riparian habitat potentially subject to CDFW jurisdiction (California Fish and Game Code 2019).

4 RESULTS

Eight wetland sampling points (WSP) were examined in support of this jurisdictional delineation, illustrated on Figures A-3 and A-4a–A-4c:

- WSP01 was examined at the western edge of the Project site in an area dominated by hydrophytic vegetation. Wetland hydrology and a dominance of hydrophytic vegetation were observed at WSP01; however, hydric soils were not observed. Therefore, WSP01 was determined to be upland.
- WSP02 was examined in a ditch where ponding was observed. All three wetland parameters were met at WSP02, including the presence of hydrogen sulfide. WSP02 was determined to be within wetland waters of the U.S. (wWoUS).
- WSP03 was paired with WSP02 adjacent to the ditch on a dirt road. Based on the lack of hydrophytic vegetation at this location, WSP03 was determined to be upland.
- WSP04 was examined at the northwestern edge of the Project site in an area dominated by hydrophytic vegetation; however, wetland hydrology and hydric soils were not observed. Therefore, WSP04 was determined to be upland.
- WSP05 was examined in a depressional area where hydrophytic vegetation was observed. Wetland hydrology was present, although a dominance of hydrophytic vegetation and hydric soils was not observed. Therefore, WSP05 was determined to be upland.

- WSP06 was examined adjacent to an irrigation pond where hydrophytic vegetation was present. WSP06 demonstrated a dominance of hydrophytic vegetation and wetland hydrology, but hydric soils were not observed. Therefore, WSP06 was determined to be upland.
- WSP07 was examined within a ditch at the southwestern edge of the Project site. All three wetland parameters were met at WSP07, including the presence of hydrogen sulfide. WSP07 was determined to be within wWoUS.
- WSP08 was examined outside of the ditch near WSP07. Due to the lack of dominant hydrophytic vegetation at this location, WSP08 was determined to be upland.

Representative photographs of the Project site are presented in Appendix B, Site Photographs. Datasheets, including three Wetland Determination Data Forms, are presented in Appendix C, Datasheets.

The results of this jurisdictional delineation are based on the best professional judgement of the qualified delineators; however, all conclusions regarding potential jurisdiction in this report should be considered preliminary and at the final discretion of the regulatory agencies.

The Project site is not located within USFWS-designated critical habitat (USFWS 2021b).

4.1 Topography and Hydrology

All aquatic resources on the Project site receive flow from the East Highline Canal. Hydrology on the Project site is manipulated via a system of manufactured canals and reservoirs used for irrigation of adjacent croplands. Flow from the East Highline Canal is conveyed northward and pumped into several lateral canals that direct flow throughout the Project site. East Highline Lateral Eleven captures flow from the East Highline Canal at the south end of the Project site and conveys it northward via a concrete-lined V-ditch. The V-ditch connects to two active reservoirs (Unnamed Reservoirs 03 and 04; see Figure A-3) via underground culverts and terminates at the northern portion of the site where flow is collected from the V-ditch by an irrigation system along the edges of croplands. Additionally, two abandoned reservoirs (Unnamed Reservoirs 01 and 02) are situated north of the East Highline Lateral Eleven at the south end of the site. Reservoirs 01 and 02 do not currently possess hydrologic connection but were determined to be wWoUS. Another concrete-lined V-ditch (East Highline Lateral Twelve) pumps water from the East Highline Canal at the western edge of the site and conveys the flow westward. A vegetated ditch (Holtville Main Drain) is situated north of East Highline Lateral Twelve and was determined to be wWoUS. The Project site is within the Salton Sea Hydrologic Unit Code watershed (HUC12 181002040405) (USGS 2021).

4.2 Vegetation

Native vegetation cover types are not present in most of the actively used agricultural fields; however, creosote bush (*Larrea tridentata*) [UPL] is present as the predominant species in fallow agricultural fields. Upland vegetation in the Project site includes creosote bush, alkali goldenbush (*Isocoma acradenia*) [FACU], common Mediterranean grass (*Schismus barbatus*) [UPL], and sparsely scattered California fan palm (*Washingtonia filifera*) [FAC]. Riparian vegetation within and along the margins of drainages consists of broadleaf cattail (*Typha latifolia*) [OBL], arrowweed (*Pluchea sericea*) [FACW], giant reed (*Arundo donax*) [FACW], and salt cedar (*Tamarix* sp.) [FAC].

Wetland plant indicator codes were determined using *The National Wetland Plant List: 2016 Wetland Ratings* (Lichvar et al. 2016).[1]

4.3 Soils

Soils in the Project site are within the Imperial County, California, Imperial Valley Area (CA683) and include the following mapped soil types (NRCS 2021):

- Carsitas gravelly sand, 0 to 5 percent slopes
- Glenbar complex
- Meloland very fine sandy loam, wet
- Meloland and Holtville loams, wet
- Niland gravelly sand, wet
- Pits
- Rositas sand, 0 to 2 percent slopes
- Rositas fine sand, 0 to 2 percent slopes
- Rositas fine sand, 2 to 9 percent slopes
- Rositas fine sand, wet, 0 to 2 percent slopes
- Superstition loamy fine sand
- Torriorthents and Orthids, 5 to 30 percent slopes
- Vint loamy very fine sand, wet

Sediment textures observed in undeveloped portions of the Project site include silty clay, sandy loam, sandy clay loam, and loamy sand. The substrates of water features on the site include manufactured materials such as concrete and geotextile matting.

4.3.1 U.S. Army Corps of Engineers Non-Wetland Waters of the U.S.

The East Highline Canal has significant nexus to the Salton Sea—a traditionally navigable water—and was, therefore, determined to be non-wetland waters of the U.S. (WoUS). The Project site contains 8.453 acres (5,350 linear feet) of non-wetland WoUS (Table 1; Figure A-4a).

4.3.2 U.S. Army Corps of Engineers Wetland Waters of the U.S.

Unnamed Reservoirs 01 and 02, as well as the Holtville Main Ditch, were determined to be wetland waters and are adjacent to the East Highline Canal. Therefore, these features were determined to be wWoUS. Additionally, an inundated portion of the East Highline Lateral Eleven was assumed to be wetland and is also adjacent to the East Highline Canal. Therefore, these features were determined to be wWoUS. The Project site contains 2.872 acres (2,420 linear feet) of wWoUS (see Table 1; Figures A-4a and A-4c).

[1] Indicator codes are defined as follows: UPL = upland; Found 99% of the time in uplands, FACU = facultative upland, FAC = facultative; Found 36-66% of the time in wetlands., FACW = facultative wetland; Found 67-99% of the time in wetlands., and OBL = obligate; Found 99% of the time in wetlands. Plant species with no indicator status were assumed upland (UPL).

4.3.3 Regional Water Quality Control Board Non-Wetland Waters of the State

Both East Highline Lateral Eleven and East Highline Lateral Twelve are concrete lined and receive flow from the East Highline Canal; however, these features terminate into irrigation systems for nearby croplands and were, therefore, determined to be non-wetland Waters of the State (WoS). The Project site cumulatively contains 0.660 acre (4,440 linear feet) of non-wetland WoS (see Table 1; Figures A-4a–A-4c).

4.3.4 California Department of Fish and Wildlife Jurisdiction

The Project site includes CDFW jurisdictional streambeds that include the USACE and RWQCB jurisdiction described above with additional areas where the limits of riparian vegetation extend beyond the ordinary high-water mark. The Project site contains 6.508 acres (3,020 linear feet) of CDFW jurisdictional streambed.

Table 1. Mapped Jurisdiction within the Project site

Feature ID	Wetland Waters of the U.S. (wWoUS)		Non-wetland Waters of the U.S. (WoUS)		Non-wetland Waters of the State (WoS)		CDFW Jurisdictional Streambed	
	Acres	Linear Feet	Acres	Linear Feet	Acres	Linear Feet	Acres	Linear Feet
East Highline Canal	0	0	8.453	5,350	0	0	0	0
Holtville Main Drain	0.884	840	0	0	0	0	0	0
East Highline Lateral Eleven	0.355	480	0	0	0.611	4,210	1.147	1,480
East Highline Lateral Twelve	0	0	0	0	0.049	230	0	0
Unnamed Reservoir 01	0.856	570	0	0	0	0	0	0
Unnamed Reservoir 02	0.777	530	0	0	0	0	0	0
Unnamed Reservoir 03	0	0	0	0	0	0	0.836	440
Unnamed Reservoir 04	0	0	0	0	0	0	4.525	1,100
Total	**2.872**	**2,420**	**8.453**	**5,350**	**0.660**	**4,440**	**6.508**	**3,020**

5 IMPACT ASSESSMENT

The Project layout has been designed to avoid all drainages, wetlands, and riparian habitats in the immediate vicinity. Therefore, there would be no direct impacts to jurisdictional waters or riparian habitats as a result of the implementation of the Project. Indirect impacts to drainages may result from erosion and stormwater flows from the Project site into drainages below the Project elevation. However, the Project proponent will be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) which will include best management practices (BMPs) to avoid and/or control site runoff, sedimentation and erosion. These measures should be sufficient to prevent impacts to aquatic resources.

Potential impacts to biological resources associated with riparian habitats and proposed mitigation measures are discussed further in the Biological Resources Assessment.

6 RECOMMENDATIONS

It is anticipated that project activities may proceed without permits from the USACE, RWQCB, or CDFW provided the project layout incorporates avoidance of permanent and temporary impacts to aquatic resources.

The findings and conclusions presented in this report, including the location and extent of areas subject to regulatory jurisdiction, represent the professional opinion of SWCA. These findings and conclusions should be considered preliminary and at the final discretion of the applicable resource agency.

7 LITERATURE CITED

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APPENDIX A

Figures

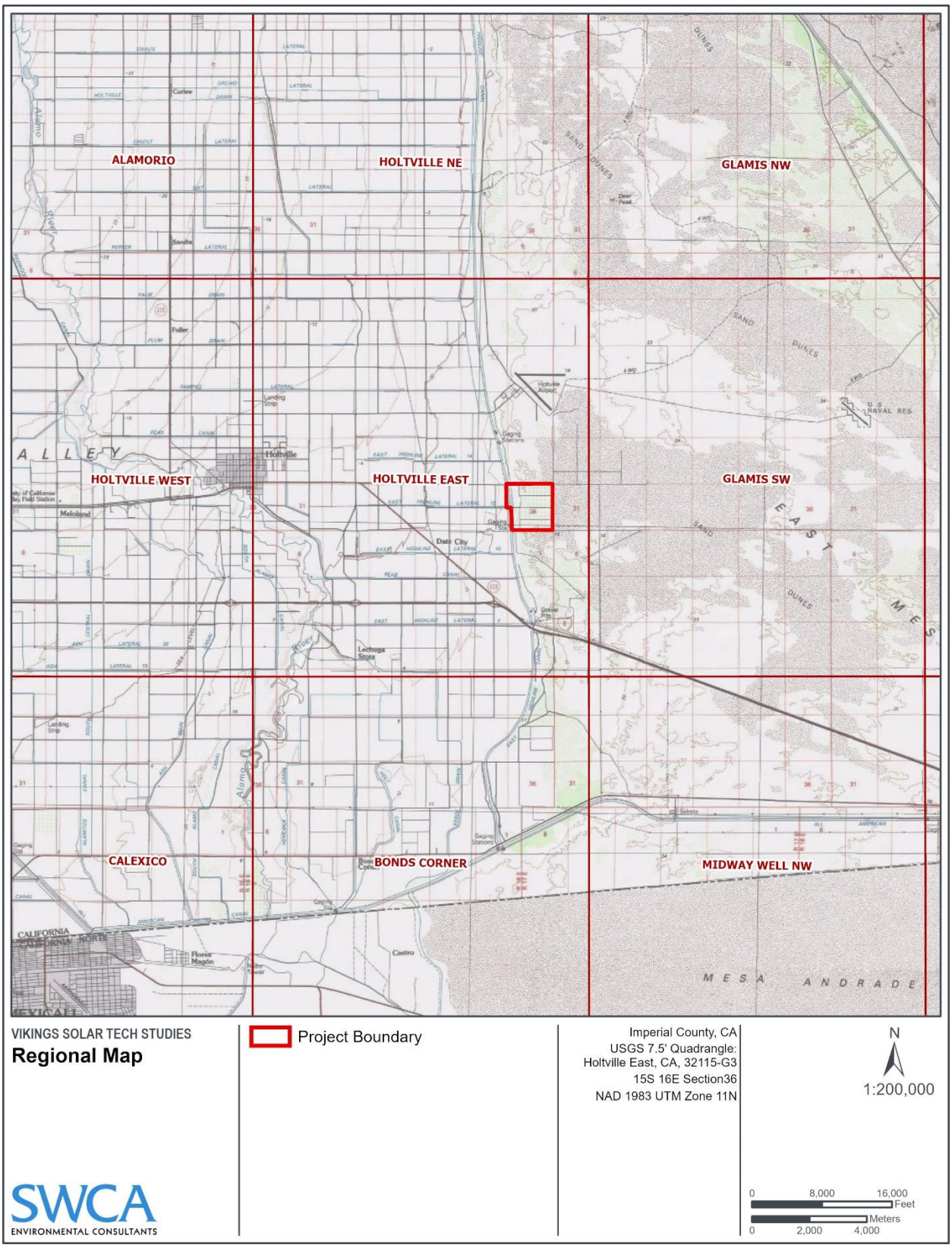

Figure A-1. Project location.

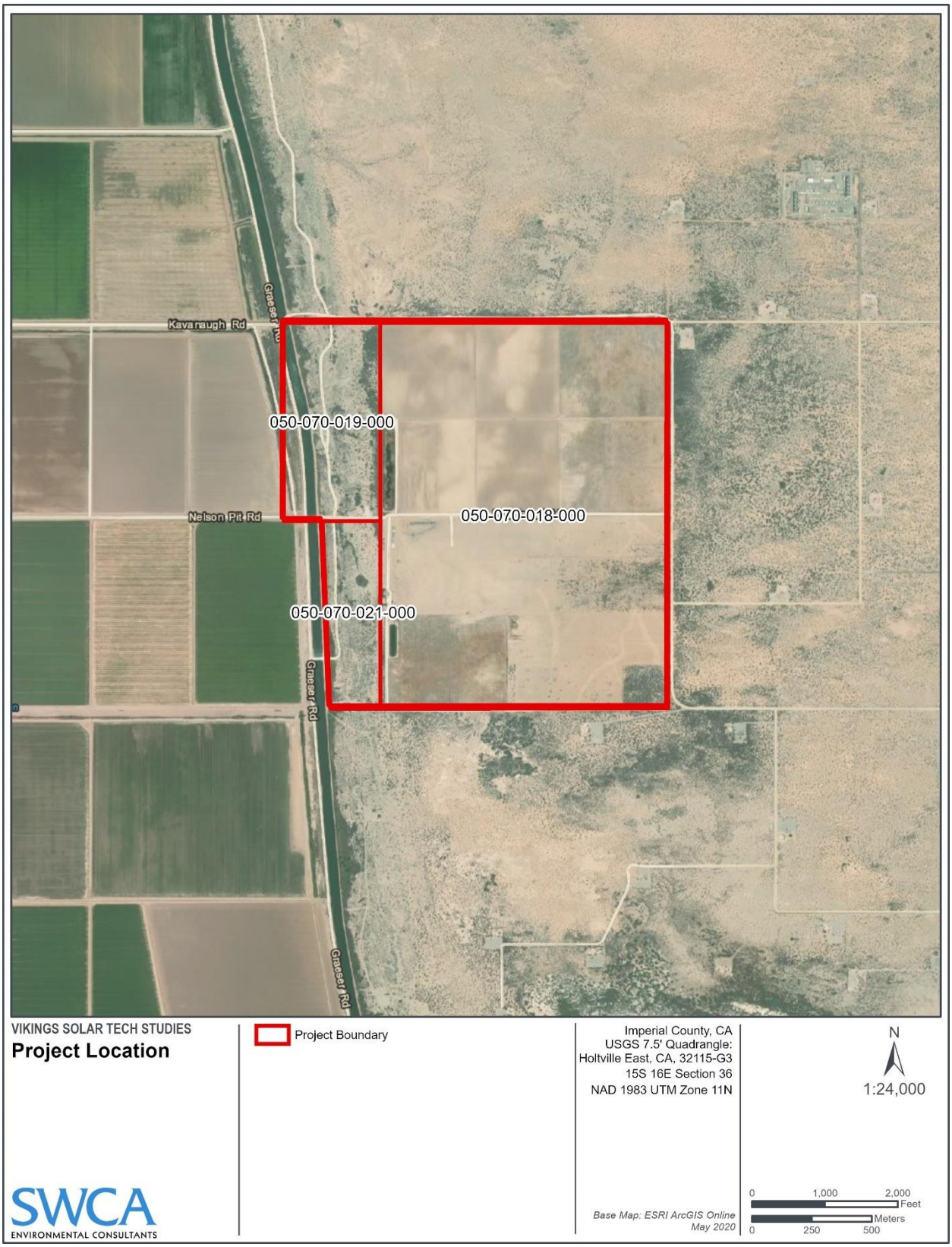

Figure A-2. Project vicinity.

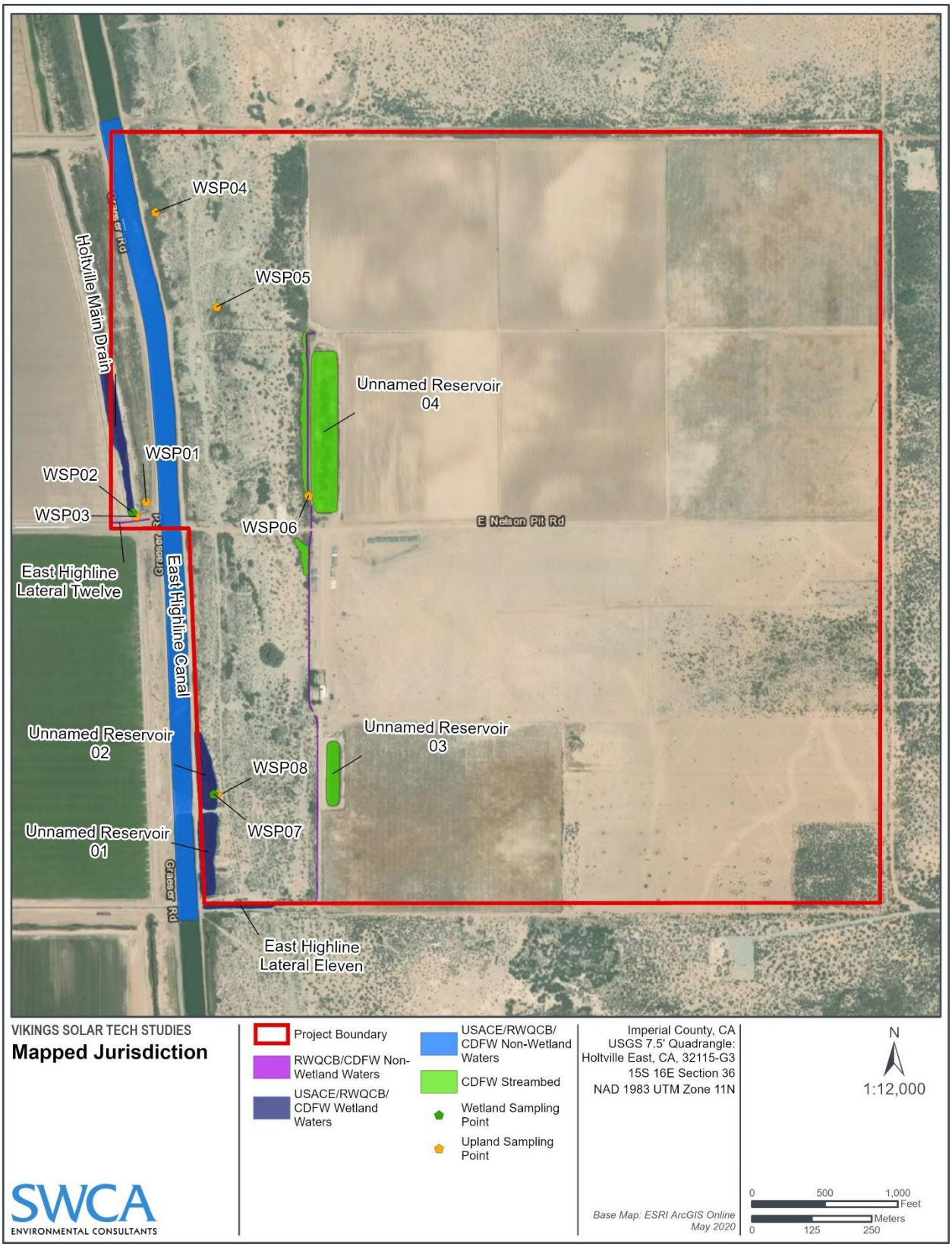

Figure A-3. Mapped jurisdiction.

Figure A-4a. Mapped jurisdiction (western section).

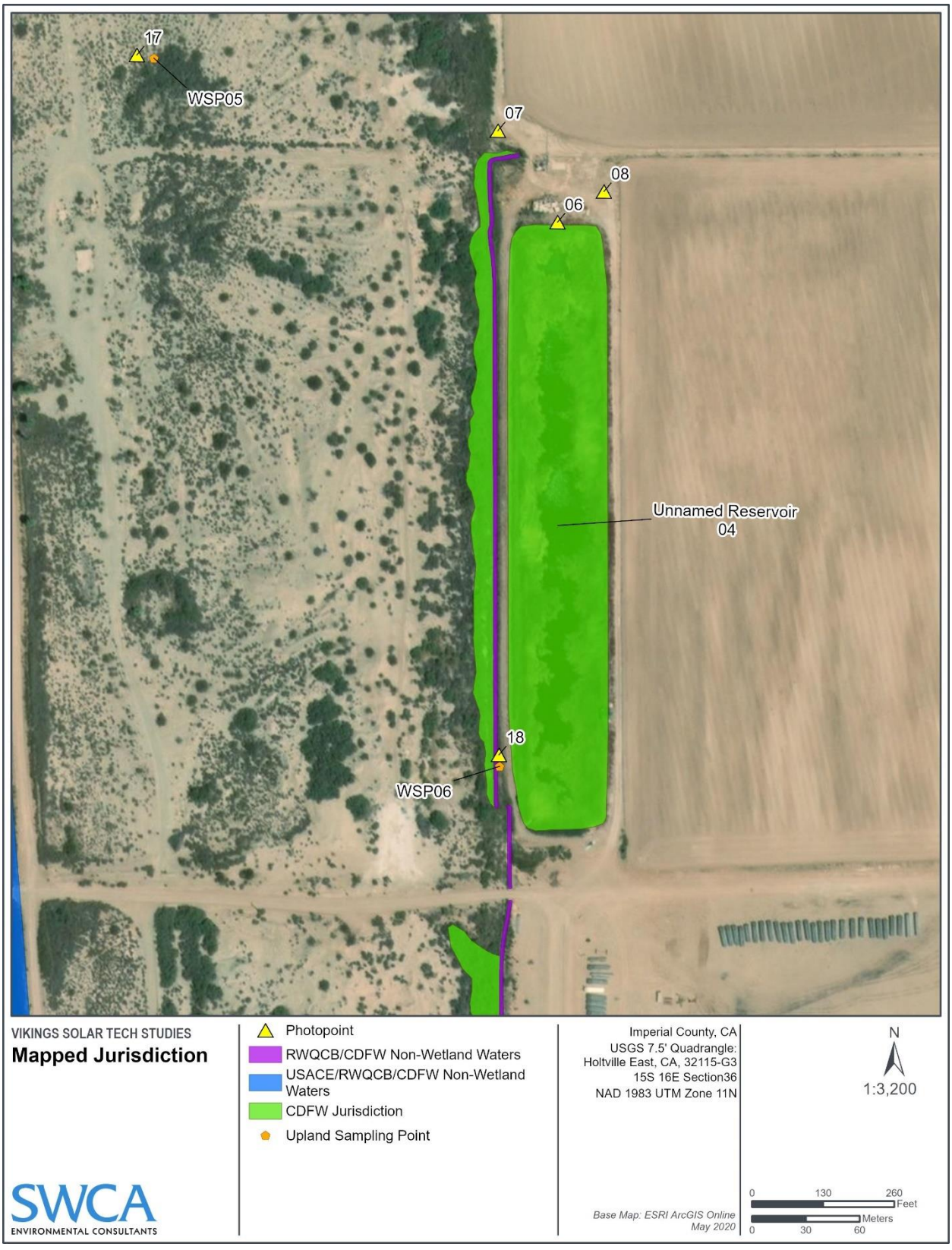

Figure A-4b. Mapped jurisdiction (northern section).

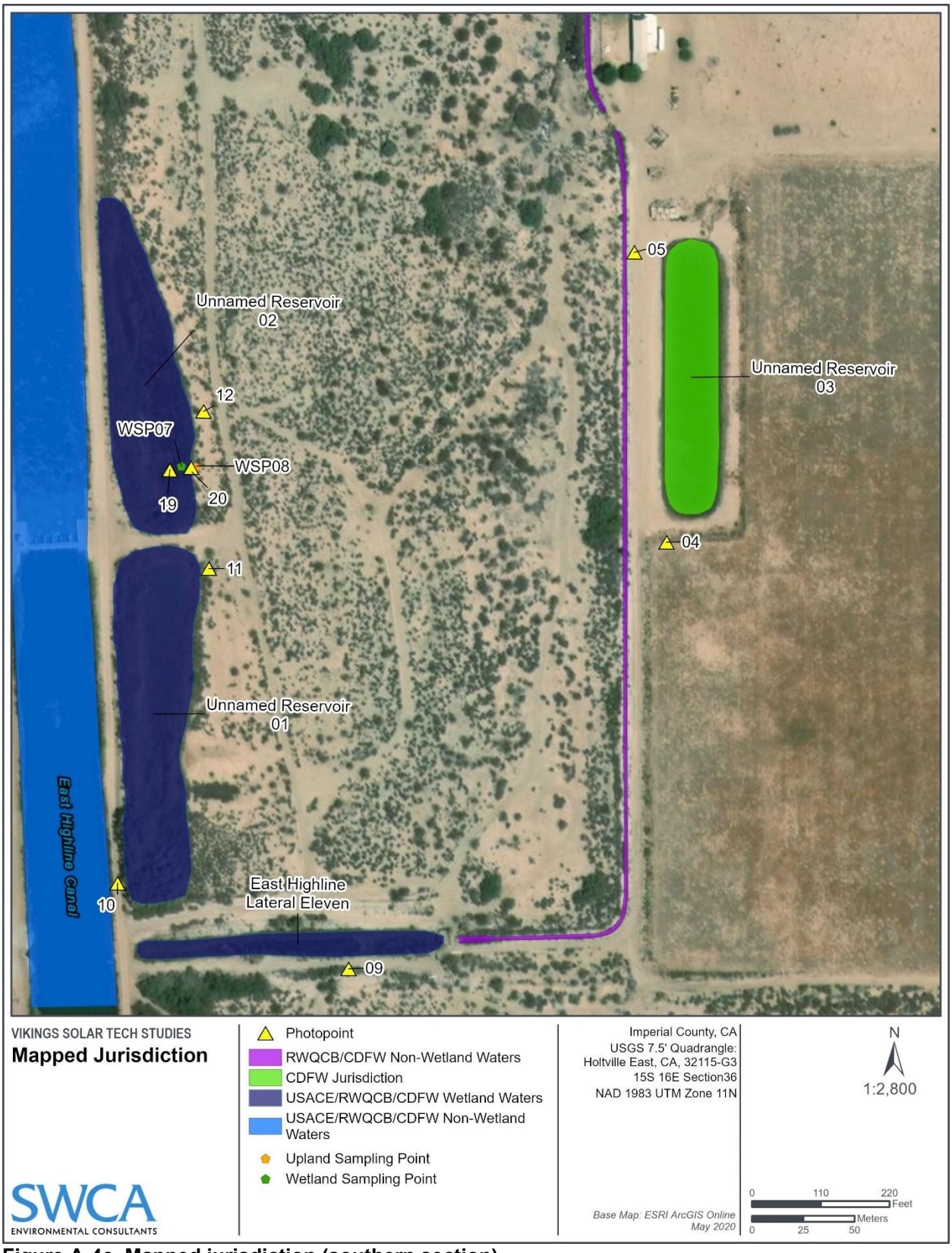

Figure A-4c. Mapped jurisdiction (southern section).

APPENDIX B

Site Photographs

Photograph B-1. Vegetated banks of East Highline Canal, view facing southeast (upstream).

Photograph B-2. Pump feeding into East Highline Lateral Twelve, view facing east (upstream).

Photograph B-3. Riparian vegetation dominated by broadleaf cattail in Holtville Main Drain, view facing southeast.

Photograph B-4. Geotextile lining along bank and inundated bed of Unnamed Reservoir 03, view facing northwest.

Photograph B-5. Concrete-lined channel East Lateral Eleven, view facing south (upstream).

Photograph B-6. Vegetated banks and inundated bed of Unnamed Reservoir 04, view facing south.

Photograph B-7. Extent of riparian vegetation dominated by arrowweed along western boundary of East Highline Lateral Eleven, view facing south.

Photograph B-8. Irrigation pipe fed by East Highline Lateral Eleven used for watering adjacent croplands, view facing north.

Photograph B-9. Portion of East Highline Lateral Eleven inundated with riparian vegetation along banks dominated by giant reed, view facing northwest.

Photograph B-10. Dense riparian vegetation of Unnamed Reservoir 01 with banks dominated by tamarisk, view facing north.

Photograph B-11. Dense herbaceous growth of giant reed in bed of Unnamed Reservoir 01, view facing southwest.

Photograph B-12. Dense herbaceous growth dominated by broadleaf cattail in bed of Unnamed Reservoir 02, view facing west.

Photograph B-13. WSP01, view facing south.

Photograph B-14. WSP02, view facing west.

Photograph B-15. WSP03, view facing north.

Photograph B-16. WSP04, view facing northwest.

Photograph B-17. WSP05, view facing southeast.

Photograph B-18. WSP06, view facing south.

Photograph B-19. WSP07, view facing east.

Photograph B-20. WSP08, view facing east.

APPENDIX C

Datasheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 64085 Vikings Solar City/County: Date/Imperial Sampling Date: 12/2/2020

Applicant/Owner: Apex Energy Solutions, LLC State: CA Sampling Point: WSP01

Investigator(s): Malek Al-Marayati, Section, Township, Range: S36 T15S R16E

Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): LRR D Lat: 32.803774° Long: -115.279997° Datum: WGS 84

Soil Map Unit Name: Rositas fine sand, wet, 0 to 2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

vegetation dominated by non-native species.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1. Pluchea sericea	30	Y	FACW
2.			
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Arundo donax	30	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: 15ft)			
1. N/A			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: WSP01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1.5	7.5yr 4/4	100					SiC	
1.5-4	7.5yr 5/4	100					SiC	
4-9	7.5yr 4/4	98	10YR 8/3	2	D	M	SiC	
9-20	7.5yr 4/4	98	7.5YR 6/8	2	C	PL	SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Layer 1.5-4" --> pH=6.5-7.0 (not alkaline)
AAD+ reaction negative.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

Arid West – Version 2.0

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 64085 Vikings Solar City/County: Date/Imperial Sampling Date: 12/2/2020

Applicant/Owner: Apex Energy Solutions, LLC State: CA Sampling Point: WSP02

Investigator(s): Malek Al-Marayati Section, Township, Range: S36 T15S R16E

Landform (hillslope, terrace, etc.): embankment Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): LRR D Lat: 32.803563° Long: -115.280297° Datum: WGS 84

Soil Map Unit Name: Rositas fine sand, wet, 0 to 2 percent slopes NWI classification: R4SBCx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

ditch associated with irrigation canal for adjacent farmlands.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Tamarix aphylla	5	Y	FAC
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1. N/A			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. Typha latifolia	60	Y	OBL
2. Cyperus odoratus	20	Y	FACW
3. Pluchea odorata	5	N	FACW
4.			
5.			
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: 15ft)			
1. N/A			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: WSP02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

Hydrogen Sulfide detected upon contact with topsoil, which satisfies primary soil indicator, therefore no soil sample collected.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ✓ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? **Yes** ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 64085 Vikings Solar City/County: Date/Imperial Sampling Date: 12/2/2020

Applicant/Owner: Apex Energy Solutions, LLC State: CA Sampling Point: WSP03

Investigator(s): Malek Al-Marayati Section, Township, Range: S36 T15S R16E

Landform (hillslope, terrace, etc.): dirt road Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): LRR D Lat: 32.803498° Long: -115.280220° Datum: WGS 84

Soil Map Unit Name: Rositas fine sand, wet, 0 to 2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

Sampling point is on the compacted soil of an actively used dirt road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5ft)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: 15ft)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: N/A (A)

Total Number of Dominant Species Across All Strata: N/A (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: N/A (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: WSP03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

No soil sample collected due to lack of dominant hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no hydrologic indicators present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 64085 Vikings Solar City/County: Date/Imperial Sampling Date: 12/2/2020

Applicant/Owner: Apex Energy Solutions, LLC State: CA Sampling Point: WSP04

Investigator(s): Malek Al-Marayati Section, Township, Range: S36 T15S R16E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): LRR D Lat: 32.809226° Long: -115.279789° Datum: WGS 84

Soil Map Unit Name: Rositas fine sand, wet, 0 to 2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Tamarix aphylla	20	Y	FAC
2.			
3.			
4.			
	20 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1. Pluchea sericea	80	Y	FACW
2.			
3.			
4.			
5.			
	80 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Arundo donax	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 15ft)			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: WSP04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					SCL	
2-5.5	10YR 3/4	100					SL	
5.5-20	10YR 4/4	100					SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

2-5.5" Depth the pH=6.5-7.0 -->not alkaline

AAD+ reaction negative for same layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 64085 Vikings Solar City/County: Date/Imperial Sampling Date: 12/2/2020

Applicant/Owner: Apex Energy Solutions, LLC State: CA Sampling Point: WSP05

Investigator(s): Malek Al-Marayati Section, Township, Range: S36 T15S R16E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): LRR D Lat: 32.807443° Long: -115.278419° Datum: WGS 84

Soil Map Unit Name: 129: Pits NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Tamarix aphylla	10	Y	FAC
2.			
3.			
4.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1. Pluchea sericea	15	Y	FACW
2. Isocoma acradenia	20	Y	FACW
3.			
4.			
5.			
	35	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. Schismus barbatus	3	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	3	= Total Cover	
Woody Vine Stratum (Plot size: 15ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 97 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: WSP05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	7.5YR 4/3	100					SL	
2-7	10YR 3/4	100					LS	
7-15	7.5YR 5/4	100					SCL	
15-20	10YR 3/4	100					SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

2-7" layer the pH = 7.0 (not alkaline)

same layer AAD+ test negative

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 64085 Vikings Solar City/County: Date/Imperial Sampling Date: 12/2/2020

Applicant/Owner: Apex Energy Solutions, LLC State: CA Sampling Point: WSP06

Investigator(s): Malek Al-Marayati Section, Township, Range: S36 T15S R16E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 20

Subregion (LRR): LRR D Lat: 32.803882° Long: -115.276369° Datum: WGS 84

Soil Map Unit Name: Meloland very fine sandy loam, wet NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Hillslope is adjacent to a concrete-lined canal used for irrigation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1. Pluchea sericea	100		
2.			
3.			
4.			
5.			
	100 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. Typha latifolia	20	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: 15ft)			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

US Army Corps of Engineers Arid West – Version 2.0

SOIL

Sampling Point: WSP06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/4	100					SiC	
4-7	7.5YR 4/4	100					SiC	
7-15	7.5YR 5/4	100					SiC	
15-20	7.5YR 5/4	97	7.5YR 6/8	3	C	M	SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 64085 Vikings Solar City/County: Date/Imperial Sampling Date: 12/2/2020

Applicant/Owner: Apex Energy Solutions, LLC State: CA Sampling Point: WSP07

Investigator(s): Malek Al-Marayati Section, Township, Range: S36 T15S R16E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 25

Subregion (LRR): LRR D Lat: 32.798262° Long: -115.278482° Datum: WGS 84

Soil Map Unit Name: Rositas fine sand, wet, 0 to 2 percent slopes NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Sampling point is within an abandoned reservoir.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Tamarix aphylla	10	Y	FAC
2.			
3.			
4.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1. Pluchea sericea	50	Y	FACW
2.			
3.			
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. Typha latifolia	50	Y	OBL
2. Phragmites australis	2	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	52	= Total Cover	
Woody Vine Stratum (Plot size: 15ft)			
1. N/A			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 48 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: WSP07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

Hydrogen sulfide odor detected @ 10 inches depth. No further examination of soil layers needed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ✓ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): _____

Wetland Hydrology Present? **Yes** ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 64085 Vikings Solar City/County: Date/Imperial Sampling Date: 12/2/2020

Applicant/Owner: Apex Energy Solutions, LLC State: CA Sampling Point: WSP08

Investigator(s): Malek Al-Marayati Section, Township, Range: S36 T15S R16E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): LRR D Lat: 32.798259° Long: -115.278406° Datum: WGS 84

Soil Map Unit Name: Rositas fine sand, wet, 0 to 2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Tamarix aphylla	12	Y	FAC
2.			
3.			
4.			
	12	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1. Larrea tridentata	15	Y	UPL
2. Isocoma acradenia	25	Y	FACU
3. Pluchea sericea	10	Y	FACW
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. Schismus barbatus	17	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	17	= Total Cover	
Woody Vine Stratum (Plot size: 15ft)			
1.			
2.			
	17	= Total Cover	

% Bare Ground in Herb Stratum 83 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

US Army Corps of Engineers Arid West – Version 2.0

SOIL

Sampling Point: WSP08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

Dominant vegetation was not hydrophytic, therefore no soil sample collected.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No surface indicators observed.

Biological Resources Assessment

Vikings Solar Energy Storage Project

Imperial County, California

JANUARY 2021

PREPARED FOR

Vikings Energy Farm, LLC

PREPARED BY

SWCA Environmental Consultants

BIOLOGICAL RESOURCES ASSESSMENT
VIKINGS SOLAR ENERGY STORAGE PROJECT, IMPERIAL COUNTY, CALIFORNIA

Prepared for

Vikings Energy Farm, LLC
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SWCA Project No. 64085

January 2021

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Appendices

Figures

1 INTRODUCTION

Vikings Energy Farm, LLC (Applicant), retained SWCA Environmental Consultants (SWCA) to conduct a biological resources assessment in support of the proposed Vikings Solar Energy Storage Project (project) in Imperial County, California (county). The Applicant proposes to develop a 150-megawatt alternating current solar photovoltaic (PV) energy generation project with an integrated 150-megawatt/600-megawatt-hours battery storage project on approximately 603.61 acres of land. The following assessment was conducted to analyze the project's potential impacts on biological resources that may be located in the project area, in compliance with the California Environmental Quality Act (CEQA).

2 PROJECT DESCRIPTION AND LOCATION

The project site is located at the intersection of E. Nelson Pit Road and Graeser Road, approximately 5.5 miles east of the city of Holtville and 15 miles east of the city of El Centro in Section 36 of Township 15 South and Range 16 East of the San Bernardino Base and Meridian of the Holtville East U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle. The project is located on Imperial County Assessor's Parcel Numbers (APNs) 050-070-018-000 (approximately 480 acres), 050-070-019 (approximately 80 acres), and 050-070-021 (approximately 44 acres), owned by RL&R Strahm, ARB Inc., and the County of Imperial, respectively.

The project proposes to utilize solar photovoltaic (PV technology modules mounted on fixed frames or horizontal single-axis tracker (HSAT) systems. The fixed-frame PV module arrays would be mounted on racks that would be supported by driven piles, arranged in arrays spaced approximately 15 to 25 feet apart (pile to pile) to maximize performance and to allow access for panel cleaning. These arrays would be separated from each other and the perimeter security fence by up to 30-foot-wide interior roads.

Electricity generated by the PV modules would be collected by a direct current (DC) collection system routed underground in trenches. This DC power would be delivered to one of the pad-mounted inverters in weatherproof enclosures located within the arrays. Underground or overhead 12.5-kilovolt (kV) or 34.5-kV collection lines would transmit the electricity to the new on-site substation, proposed to be located on the southern boundary of APN 050-070-019. A new interconnection switching station would be constructed at the southern boundary of APN 050-070-019, immediately adjacent to the project substation. The project substation and interconnection switching station would be connected via a single overhead 230-kV tie line. The interconnection switching station would be enclosed within its own fence.

To connect to the project's interconnection facilities, the medium voltage power produced by the project would be conveyed underground, or above ground where necessary, to cross over any sensitive site features. Distribution from the site would be via an overhead connection. The electrical energy produced by the project would be conducted through the project interconnection facilities to the proposed 230-kV generator intertie (gentie) line and delivered to the existing Imperial Irrigation District (IID) approved point of interconnection (POI) on the 230-kV KN & KS Line. The proposed battery energy storage system (BESS or ESS) would be constructed adjacent to the project's solar facilities and would consist of either lithium ion (Li-ion) or flow batteries. Underground trenches with conduits would be used to connect the batteries to the control and monitoring systems, and inverters would be used to convert the PV-produced DC power to alternating current power.

Figure 1. Vicinity map.

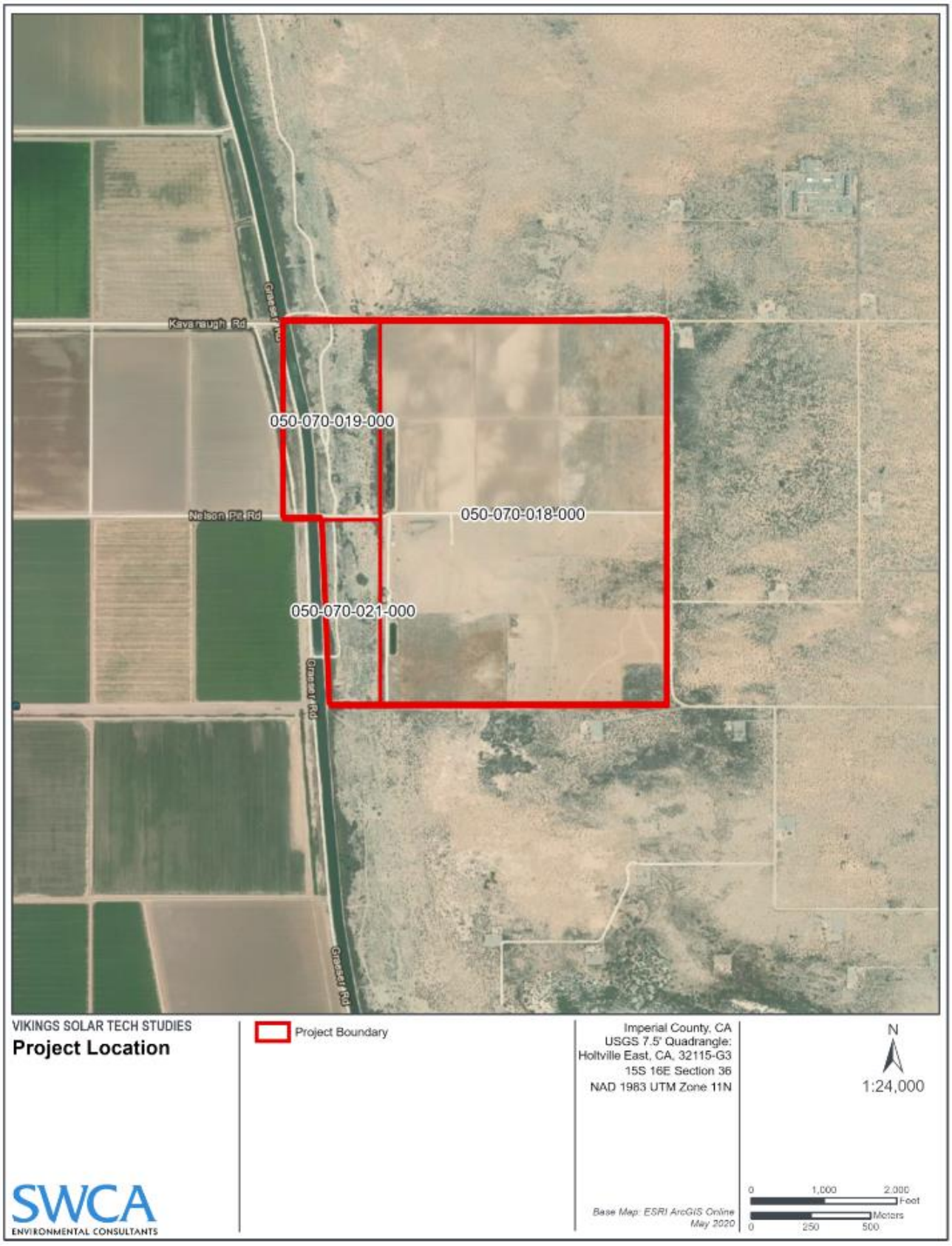

Figure 2. Project location.

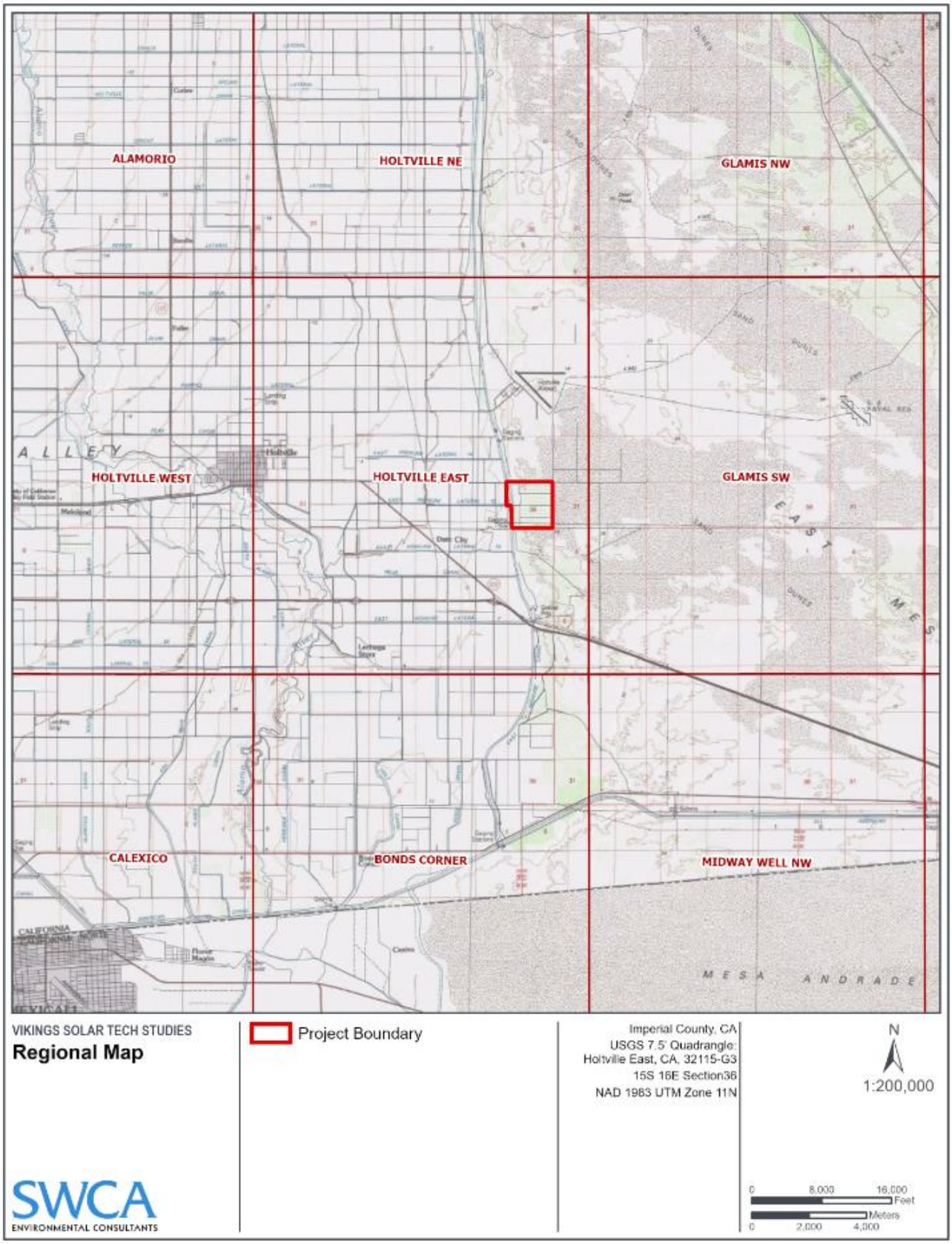

Figure 3. Topographic map.

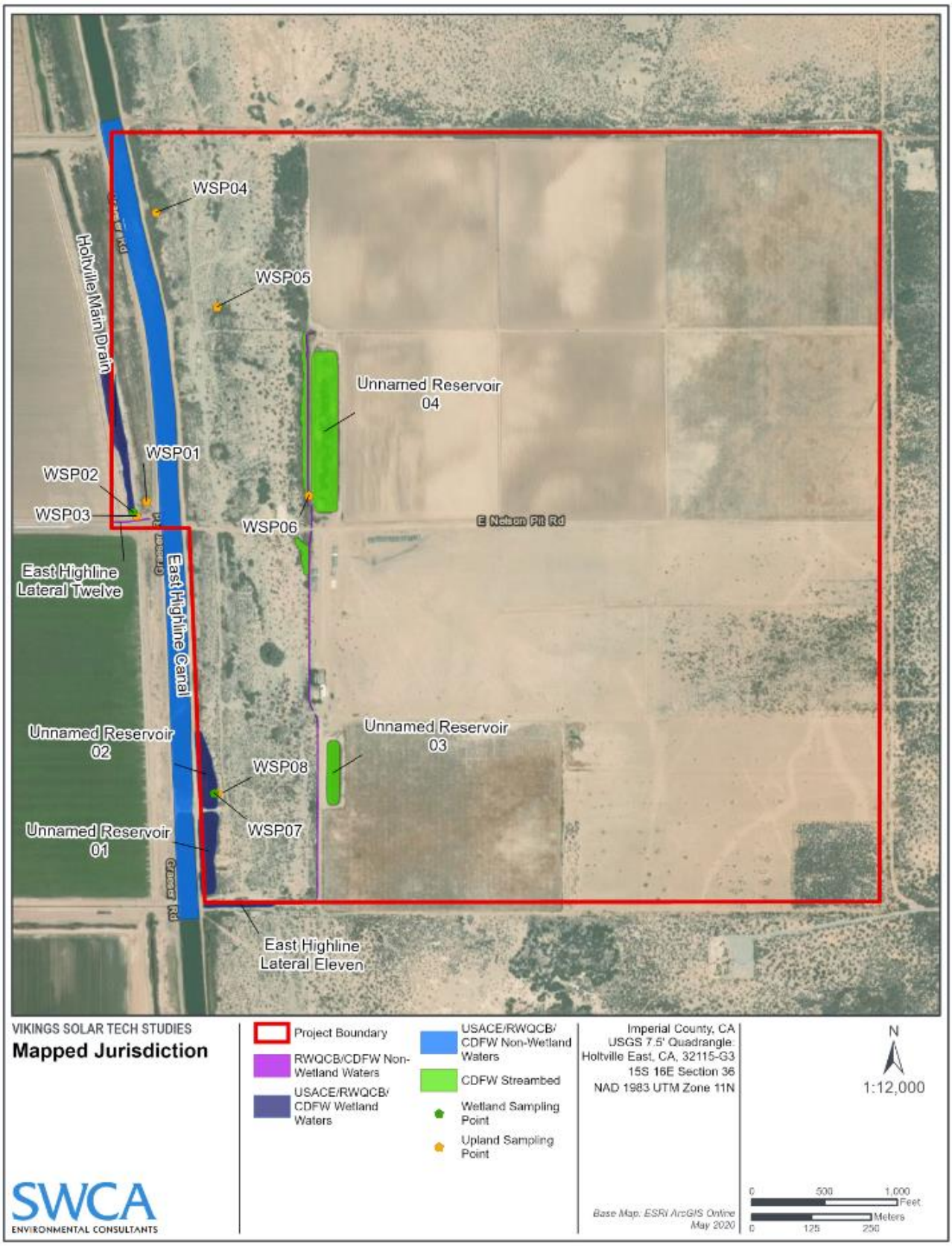

Figure 4. Site plan with aquatic features.

The proposed battery energy storage system (BESS or ESS) would be constructed adjacent to the projects solar facilities and would consist of either lithium ion (Li-ion) or flow batteries. The batteries will either be housed in storage containers or buildings fitted with heating, ventilation and air conditioning (HVAC) and fire suppression systems as necessary, depending on the final selection of battery technology. Inside the housing the batteries will be placed on racks, the orientation of which depends on the type of housing. Underground trenches with conduits will be used to connect the batteries to the control and monitoring systems, and inverters to convert the PV produced DC power to AC power.

Six-foot-high security fencing would be installed around the perimeter of each of the project sites at the commencement of construction, and site access would be limited to authorized site workers.

2.1 Site Characteristics

The project lies in the Colorado Desert, a subregion within the larger Sonoran Desert. The region is characterized by very low rainfall (2–3 inches per year), which occurs during winter and the summer monsoon. High temperatures may reach 120ºF or higher, and winter lows are rarely below freezing. The region is generally low in elevation and flat, with extremes of 275 feet below sea level and peaks up to about 10,000 feet.

The project site is generally level, ranging from about 23 to 45 feet above mean ground level. Surrounding land uses include active agriculture (farmed cropland) to the west and undeveloped open space to the north, south, and east. Appendix A provides representative photographs.

The project site is composed of three parcels. Parcel 1 (APN 050-070-018-000) is the largest of the three parcels comprising the project site, stretching from Kavanaugh Road in the north to East Highline Lateral Eleven in the south and west, and east to the project boundary. Two agricultural reservoirs are present along the western boundary of this parcel, with one immediately north of E. Nelson Pit Road and the second near the southwest corner of the parcel. Current land use consists of a mix of actively farmed agricultural land in the north and northwest, and fallow fields that do not appear recently farmed along the southern and eastern edges. Native vegetation cover types are not present in most of the fields; however, creosote bush (*Larrea tridentata*) is present as the predominant species in the southeastern corner of the parcel.

Parcel 2 (APN 050-070-019-000) is in the northwest quadrant of the project site, extending west across Graeser Road, East Highline Canal, and Holtville Main Drain, north to Kavanaugh Road, and south to E. Nelson Pit Road. The East Highline Lateral Eleven canal lies along the border between this parcel and Parcel 1. The parcel is composed of primarily disturbed/ruderal upland desert vegetation, with a mix of riparian/upland species near the canals. Upland vegetation consists of creosote bush, alkali goldenbush (*Isocoma acradenia*), common Mediterranean grass (*Schismus barbatus*), and sparsely scattered California fan palms (*Washingtonia filifera*).

Parcel 3 (APN 050-070-021-000) is in the southwest corner of the project site, with E. Nelson Pit Road along the north and the East Highline Lateral Eleven canal on the s. Two abandoned reservoirs are situated north of the East Highline Lateral Eleven canal in the southern and southwestern portions of the parcel. Disturbed/ruderal upland desert vegetation is the dominant cover type, with riparian vegetation surrounding reservoirs. The upland vegetation cover type is the same as found on Parcel 2. Riparian vegetation consists of broadleaf cattail (*Typha latifolia*), arrowweed (*Pluchea sericea*), giant wild rye (*Arundo donax*), and saltcedar (*Tamarix* sp.).

Aquatic resources are described in more detail in a separate aquatic resources report (SWCA 2021). Figure 4 illustrates the location and jurisdiction of each identified feature.

3 REGULATORY SETTING

The following discussion summarizes federal, state, and local laws, regulations, and policies relating to plants, wildlife, and special-status habitats. Regulations covering aquatic resources (wetlands, ponds, streams, etc.) are excluded and are discussed in a separate aquatic resources report (SWCA 2021). Only those regulations potentially applicable to the proposed project are included herein.

3.1 Federal Regulations

3.1.1 Federal Endangered Species Act

The U.S. Congress passed the Endangered Species Act (ESA) in 1973 to protect endangered species and species threatened with extinction (federally listed species). The ESA operates in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

Section 9 of the ESA prohibits the "take" of endangered or threatened wildlife species. The legal definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 United States Code [USC] 1532 [19]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 Code of Federal Regulations [CFR] 17.3). Harassment is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR 17.3). Actions that result in take can result in civil or criminal penalties.

The U.S. Fish and Wildlife Service (USFWS) is authorized to issue permits under Sections 7 and 10 of the ESA. Section 7 mandates that all federal agencies consult with the USFWS for terrestrial species and/or National Marine Fisheries Service (NMFS) for marine species to ensure that federal agency actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat for listed species. Any anticipated adverse effects require preparation of a biological assessment to determine potential effects of the project on listed species and critical habitat. If the project adversely affects a listed species or its habitat, the USFWS or NMFS prepares a Biological Opinion. The Biological Opinion may recommend "reasonable and prudent alternatives" to the project to avoid jeopardizing or adversely modifying habitat including "take" limits.

The ESA defines critical habitat as habitat deemed essential to the survival of a federally listed species. The ESA requires the federal government to designate "critical habitat" for any species it lists under the ESA. Under Section 7, all federal agencies must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or destroy or adversely modify its designated critical habitat. These complementary requirements apply only to federal agency actions, and the latter apply only to specifically designated habitat. A critical habitat designation does not set up a preserve or refuge, and applies only when federal funding, permits, or projects are involved (i.e., a federal nexus). Critical habitat requirements do not apply to activities on private land that do not involve a federal nexus.

Section 10 of the ESA includes provisions to authorize take that is incidental to, but not the purpose of, activities that are otherwise lawful. Under Section 10(a)(1)(B), the USFWS may issue permits (incidental take permits) for take of ESA-listed species if the take is incidental and does not jeopardize the survival and recovery of the species. To obtain an incidental take permit, an applicant must submit a habitat conservation plan outlining steps to minimize and mitigate permitted take impacts to listed species.

3.1.2 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) prohibits any person, unless permitted by regulations, to

> …pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatsoever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention … for the protection of migratory birds ... or any part, nest, or egg of any such bird. (16 USC 703)

The list of migratory birds includes nearly all bird species native to the United States. The statute was extended in 1974 to include parts of birds, as well as eggs and nests. The Migratory Bird Treaty Reform Act of 2004 further defined species protected under the MBTA and excluded all non-native species. Thus, it is illegal under the MBTA to directly kill or destroy a nest of nearly any native bird species.

3.1.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668–668c) prohibits anyone from "taking" bald eagles (*Haliaeetus leucocephalus*), including their parts, nests, or eggs, without a permit issued by the Secretary of the Interior. In 1962, Congress amended the act to cover golden eagles (*Aquila chrysaetos*). The BGEPA provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The BGEPA defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The 1962 amendments included a specific exemption for possession of eagles for religious purposes of Native American tribes; however, an Indian Religious Permit is required.

On November 10, 2009, the USFWS implemented new rules under the existing BGEPA, requiring USFWS permits for all activities that may disturb or incidentally take an eagle or its nest as a result of an otherwise legal activity. Under USFWS rules (16 USC § 22.3; 72 Federal Register 31,132, June 5, 2007), "disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits and causes injury, death, or nest abandonment.

3.2 State Regulations

3.2.1 California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA), which prohibits the "taking" of listed species except as otherwise provided in state law. Section 86 of the Fish and Game Code defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Under certain circumstances, the CESA applies these take prohibitions to species petitioned for listing (state candidates). Pursuant to the requirements of the CESA, state lead agencies (as defined under CEQA Public Resources Code Section 21067) are required to consult with the CDFW to ensure that any action or project is not likely to jeopardize the continued

existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat. Additionally, the CDFW encourages informal consultation on any proposed project that may impact a candidate species. The CESA requires the CDFW to maintain a list of threatened and endangered species. The CDFW also maintains a list of candidates for listing under the CESA and of species of special concern (or watch list species).

3.2.2 Fully Protected Species

The California Fish and Game Code provides protection from take for a variety of species, referred to as fully protected species. Section 5050 lists protected amphibians and reptiles, and Section 3515 prohibits take of fully protected fish species. Eggs and nests of fully protected birds are protected under Section 3511. Migratory non-game birds are protected under Section 3800, and mammals are protected under Section 4700. Except for take related to scientific research, all take of fully protected species is prohibited.

3.2.3 Nesting Birds and Raptors

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 provides protection for all birds of prey, including their eggs and nests.

3.2.4 Migratory Bird Protection

Take or possession of any migratory non-game bird as designated in the MBTA is prohibited by Section 3513 of the Fish and Game Code.

3.2.5 Bats

Fish and Game Code Section 4150 prohibits the take of bats, regardless of their listing status.

3.2.6 California Environmental Quality Act

The CEQA was adopted in 1970 and applies to discretionary actions directly undertaken, financed, or permitted by state or local government lead agencies. CEQA requires that a project's effects on environmental resources must be analyzed and assessed using criteria determined by the lead agency. CEQA defines a rare species in a broader sense than the definitions of threatened, endangered, or California species of concern. Under this definition, the CDFW can request additional consideration of species not otherwise protected.

3.2.7 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (Fish and Game Code Section 1900-1913) directed the California Department of Fish and Game (now known as CDFW) to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protected endangered and rare plants from take. The NPPA thus includes measures to preserve, protect, and enhance rare and endangered native plants.

The CESA has largely superseded the NPPA for all plants designated as endangered by the NPPA. The NPPA nevertheless provides limitations on take of rare and endangered species as follows: "...no person

will import into this state, or take, possess, or sell within this State" any rare or endangered native plant, except in compliance with provisions of the CESA. Individual landowners are required to notify the CDFW at least 10 days in advance of changing land uses to allow the CDFW to salvage any rare or endangered native plant material.

3.2.7.1 CALIFORNIA DESERT NATIVE PLANTS ACT

The California Desert Native Plants Act protects non-listed California desert native plants from unlawful harvesting on public and private lands in the counties of Riverside, San Bernardino, Imperial, Inyo, Kern, Los Angeles, Mono, and San Diego (California Food and Agriculture Code, Sections 80001-80006, Division 23). A wide range of desert plants is protected under this act, including all species in the agave and cactus families. Harvest, transport, sale, or possession of specific native desert plants is prohibited without a valid permit or wood receipt and the required tags and seals. Species listed as rare, endangered, or threatened under federal or state law or regulations are excluded from this provision.

3.3 Federal, Regional, and Local Conservation Plans

There are no federal, state, or local parks or designated wildlife corridors or conservation areas on or adjacent to the subject property. Similarly, there are no USFWS-designated critical habitat or Habitat Conservation Plan and no CDFW Natural Community Conservation Plan at or adjacent to the project site.

3.3.1 Imperial County General Plan: Conservation and Open Space Element

The Imperial County General Plan contains the Conservation and Open Space Element (Imperial County 2016), which defines policies intended to conserve and protect the county's environmental resources, including biological resources, while encouraging economic development and growth. This Element lists the following four purposes:

- *Promote the protection, maintenance, and use the County's natural and cultural resources with particular emphasis on scarce resources and resources that require special control and management.*
- *Prevent the wasteful exploitation, destruction, and neglect of the State's natural and cultural resources.*
- *Recognize that natural resources must be maintained for their ecological value, as well as for the direct benefit to the public.*
- *Protect open space for the conservation of natural and cultural resources, the managed production of resources, outdoor recreation, and public health and safety.*

The Element defines goals specific to the conservation of biological resources:

> *Goal 1: Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions and educating the public on their value.*
>
> > *Objective 1.1: Encourage uses and activities that are compatible with the fragile desert environment and foster conservation.*
> >
> > *Objective 1.2: Coordinate the acquisition, designation, and management of important natural and cultural resource areas in Imperial County with other governmental agencies as appropriate.*

Objective 1.3: Develop standards to protect significant natural and cultural resource areas for the purpose of enhancing both the planning and decision-making process.

Objective 1.4: Ensure the conservation and management of the County's natural and cultural resources.

Objective 1.5: Provide opportunities for enjoyment of a quality natural experience to present and future generations.

Objective 1.6: Promote the conservation of ecological sites and preservation of cultural resource sites through scientific investigation and public education.

Goal 2: The County will integrate programmatic strategies for the conservation of critical habitats to manage their integrity, function, productivity, and long-term viability.

Objective 2.1: Designate critical habitats for federally listed and state-listed species.

Objective 2.2: Develop management programs, including preservation of habitat for flat-tailed horned lizard, desert pupfish, and burrowing owl.

Objective 2.3: Support investigation of long-term climate change effects on biological resources.

Objective 2.4: Use the CEQA and NEPA process to identify, conserve, and restore sensitive vegetation and wildlife resources.

Objective 2.5: Give conservation of sensitive species and habitat a high priority in County park acquisition and development programs.

Objective 2.6: Attempt to identify, reduce, and eliminate all forms of pollution; including air, noise, soil, and water.

The county defines policies and programs to implement these goals and objectives:

***Policy:** Provide a framework for the conservation and enhancement of natural and created open space, which provides wildlife habitat values.*

- *Identify Resource Areas to conserve and enhance native vegetation and wildlife. These areas include agency-designated sensitive habitats with the USFWS, Bureau of Land Management Areas of Critical Environmental Concern, and CDFW. These designated lands are designed for the protection and perpetuation of rare, endangered, and threatened species and areas important for scientific study.*
- *Projects within or in the vicinity of a Resource Area should be designed to minimize adverse impacts on the biological resources it was created to protect.*
- *Accept donations of land which have high wildlife value. Where appropriate, Imperial County shall attempt to exchange donated lands of high wildlife value with other state, federal, or other resource agencies equipped to protect and manage such lands for other lands more appropriate to County needs.*
- *Develop an environmental mitigation program that protects and restores Salton Sea wildlife habitats as offsets to biological disturbances identified through the CEQA review process for development projects. The program would allow the County and/or Salton Sea Joint Powers Agreement (JPA) to restore habitat through financing mechanisms including land banks and/or direct financial contributions from the developers to mitigate their impacts.*

- *Conserve the native habitat of sensitive plants and animals through the dedication of open space easements, or other means that will ensure their long-term protection and survival. Such easements may preclude the erecting of any structures (temporary or permanent), vegetation removal, or any other activities. These dedicated open space easements would also serve to reduce potential indirect impacts to sensitive biological resources that may result from human activities associated with future developments.*
- *Areas designated for biological open space conservation shall include buffers, which provide important breeding and foraging habitats for native and migratory birds and animals. Such buffers shall serve to separate future development from adjacent native habitat areas to ensure the perpetual regeneration of these habitats.*
- *Protect riparian habitat and other types of wetlands from loss or modification by dedicating open space easements with adequate buffer zones, and by other means to avoid impacts from adjacent land uses. Road crossings or other disturbances of riparian habitat should be minimized and only allowed when alternatives have been considered and determined infeasible.*
- *Rock outcrops which serve as significant boulder habitat for sensitive biological resources should be considered within open space easements.*
- *Preserve existing California fan palms in natural settings and other individual specimen trees which contribute to the community character and provide wildlife habitat.*
- *Preserve and encourage the open space designation of wildlife corridors, which are essential to the long-term viability of wildlife populations.*
- *Integrate open space dedications in private developments with surrounding uses to maximize a functional open space/recreation and wildlife management system.*

4 METHODOLOGY

4.1 Literature Review

The literature review consisted of reviewing publicly available spatial data from a variety of public agencies, geospatial data warehouses, and previously written reports related to the project area and surrounding nine-quadrangle buffer area to ensure that current and accurate data were integrated into the review. The nine USGS 7.5' topographic quadrangles queried in this search were Alamorio; Holtville NE; Glamis NW; Holtville West; Holtville East (site location); Glamis SW; Calexico; Bonds Corner; and Midway Well NW.

Pertinent sources reviewed included, but were not limited to, the following:

- CDFW California Natural Diversity Database (CNDDB) RAREFIND 5
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants
- eBird online database of bird distribution and abundance
- USFWS Critical Habitat Mapper and File Data
- Google Earth aerial imagery

4.2 Field Surveys

A reconnaissance-level flora and fauna survey of the project site was completed by SWCA biologist Marshall Webb on December 1 and 2, 2020. Survey goals were to characterize the existing biological conditions, preliminarily assess the site's potential to support special-status plant and wildlife species and document the occurrence of such species. Existing biological conditions were noted, and comprehensive lists of identified plant and wildlife species were compiled (Appendices B and C).

This survey should be considered preliminary since late fall is not the optimal time of year for biological surveys. Multi-season, focused, and/or protocol surveys may be necessary in the correct season(s) to fully identify the project's flora and fauna.

4.2.1 Assessment of Special-Status Species Potential

Special-status species are plants and animals in one or more of the following categories:

- Species listed or proposed for listing as threatened or endangered under the federal ESA (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under the ESA (67 Federal Register 40657, June 13, 2002).
- Species listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 California Code of Regulations [CCR] 670.5).
- Species that meet the definitions of rare or endangered under the CEQA (State CEQA Guidelines Section 15380).
- Plants listed as rare under the California Native Plant Protection Act (California Department of Fish and Game Code Section 1900 et seq.).
- Plants considered by the CNPS to be "rare, threatened, or endangered in California" (Lists 1B and 2).
- Animals fully protected in California (California Fish and Game Code Sections 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).
- Animals listed on the California Special Animals List such as Species of Special Concern, Fully Protected, and for invertebrates, all species regardless of the reason for inclusion (CDFW November 2020).

5 FINDINGS

5.1 Vegetation

The majority of the project site, including the northern and northwestern portions, is under active cultivation. The southern areas are fallow agricultural lands, characterized by expanses of disturbed sandy soils with mostly non-native plants, such as Mediterranean grass and Saharan mustard (*Brassica tournefortii*). Typical native plant species encountered were creosote bush, white bursage (*Ambrosia dumosa*), burrobush (*Ambrosia* [*Hymenoclea*] *salsola*) and widely scattered California fan palm. Pockets of natural vegetation are scattered about the southern and western areas, with creosote bush and

white bursage scrub occurring in generally sparse relative cover. The generally sparse understory includes mostly non-native annual grasses such as Mediterranean grass and cheatgrass (*Bromus tectorum*).

Aquatic resources areas immediately adjacent to the project site support native and non-native plant communities, including Sandbar Willow (*Salix exigua*) Shrubland Alliance and Saltbush Scrub/Shadscale Scrub, the latter containing plants in the saltbush genus *Atriplex*. Other common native plants include arrowweed (*Pluchea* spp.), broadleaf cattail (*Typha latifolia*), fragrant flatsedge (*Cyperus odoratus*), and common red (*Phragmites australis*). Non-native and invasive saltcedar and Athel tamarisk (*Tamarix aphylla*) are common.

5.2 Wildlife

Few species of wildlife were observed or detected during the December 2020 field survey, due to a combination of the time of year and the lack of well-developed natural habitats on-site. The only reptile seen were a few side-blotched lizards (*Uta stansburiana*). Birds seen included mourning dove (*Zenaida macroura*), killdeer (*Charadrius vociferus*), and American coot (*Fulica americana*), along with fly-over sightings of red-tailed hawk (*Buteo jamaicensis*) and common raven (*Corvus corax*). One western burrowing owl (*Athene cunicularia*) was sighted; this species is discussed separately below. Appendix C provides a list of wildlife detected on the subject property.

Wildlife common to the Colorado Desert are expected to utilize areas of the subject property where suitable habitat occurs, such as areas with at least moderate vegetation and near aquatic resources. Reptiles (lizards and snakes) including western zebra-tailed lizard (*Callisaurus draconoides rhodostictus*) and sidewinder (*Crotalus cerastes*) and birds such as killdeer (*Charadrius vociferus*), mourning dove (*Zenaida macroura*), white-winged dove (*Zenaida asiatica*), Gambel's quail (*Callipepla gambelii*), and raptors such as red-tailed hawk are likely to occur on-site. Nesting habitat is limited to ground- and shrub-nesting birds, as tree habitat is not present except for in the widely scattered California fan palms. Mammals such as black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*,) and coyote (*Canis latrans*) may also be present.

5.3 Wildlife Movement Corridors and Habitat Linkages

Wildlife corridors and habitat linkages are features that promote habitat connectivity. Wildlife corridors are typically discrete linear features within a landscape that are constrained by development or other non-habitat areas. Habitat linkages are networks of corridors through and between larger natural open space that facilitate movement of wildlife, thus providing long-term resilience of ecosystems against the detrimental effects of habitat fragmentation. Regional connection between high-quality open space habitats is critical to ongoing interchange of genetic material between populations, wildlife movement to escape natural disasters (fires, floods), colonization and expansion of populations, and plant propagation.

The project site currently provides unrestricted wildlife movement for animals of all sizes within the property.

6 SPECIAL-STATUS FLORA AND FAUNA

Appendix D lists the special-status plant and animal species previously reported as occurring on the Holtville East USGS quadrangle where the project lies and the eight quadrangles surrounding it: Alamorio; Holtville NE; Glamis NW; Holtville West; Glamis SW; Calexico; Bonds Corner; and Midway Well NW.

The relative occurrence potential shown on these tables is based on habitat suitability, current natural resource conditions of the project site, general knowledge of the project region, distance to known CNDDB and CNPS observation records, and the age of the records. Each occurrence potential rating is defined as follows:

- Present: Species has recently been documented on-site.
- High: Species has been documented on-site or adjacent to the project boundaries, habitat is suitable in the project area, and records are recent (within 20 years).
- Moderate: Project area is within known range of the species, habitat is suitable in the project area, and records are non-historic (within 40 years).
- Low: Project area is within known range of the species, habitat is marginal, records are distant, or known records are older (within 75 years).
- Unlikely: Project area is outside of known range of the species, records are distant, and/or there is no suitable habitat in the project area.
- Absent: Species has been extirpated; records are historic (greater than 75 years), no suitable habitat.

6.1 Special-Status Flora

Special-status flora include taxa listed as endangered or threatened under the federal ESA, the CESA, or both. This term "special-status" also includes plant species listed by the state as rare and those species listed by the CNPS with a Rare Plant Rank (RPR) of 1 or 2 on the most current CDFW "*Special Vascular Plants, Bryophytes, and Lichens List*" (CDFW, September 2020).

The literature search identified nine special-status plant species in the search area. Appendix D-1 lists the preliminary potential for occurrence for each special-status species within the project area. The occurrence potential is considered to be low to unlikely for all of these, based on habitat conditions within the project site.

No special-status plant species were identified during the December 2020 field survey; however, late fall is not the optimal season for floristic surveys.

6.2 Special-Status Fauna

Special-status fauna include species or subspecies listed as endangered, threatened, or candidate for listing as endangered or threatened under the federal ESA, the CESA, or both. All wildlife species designated by the CDFW as Fully Protected, Species of Special Concern, or Watch List species, as well as other wildlife included in the most current CDFW "Special Animals" list, are also included (CDFW 2020).

Fifteen special-status species of fauna were reported in the literature as occurring within the nine-quadrangle search area, with the subject property in the center. One special-status wildlife species was found on-site during the December 2020 survey, a western burrowing owl (non-nesting).

One mammal, the Yuma hispid cotton rat (*Sigmodon hispidus eremicus*), is considered to be unlikely to occur on the project site, and to have a moderate potential for occurrence near the project site (discussed in detail below). This finding is based solely on habitat conditions found during the December 2020 field survey, previous records, habitat conditions on and immediately adjacent to the project site.

6.2.1 Nesting Birds

The field survey occurred outside of the nesting season (February 1 to August 31) and no nesting bird activity was detected. However, there is potential nesting habitat within the shrubs and low vegetation in the southern third of the project site (outside areas of active agricultural land uses). Higher quality nesting habitat is present immediately adjacent to the site in the riparian habitats associated with aquatic features.

6.2.2 Birds

6.2.2.1 BURROWING OWL

Burrowing owl (*Athene cunicularia*), also called western burrowing owl, is a CDFW Special-Status Species that occupies open areas of the desert and high desert and is frequently encountered in Imperial County. This small owl occurs in a wide range of mostly open habitats in California, including grasslands, shrub-steppe, deserts, pastures, and agricultural areas.

One burrowing owl was observed at an active burrow in the southeastern portion of APN 050-070-018-000. The burrow consists of an old concrete agricultural standpipe. Burrowing owls are known to utilize a range of artificial and natural burrows. The individual owl found during this field survey is a wintering individual, possibly a transient. Although protected, the presence of this owl is not a fatal flaw to project development. Suitable habitat for burrowing owl includes short vegetation and, in the breeding season, the presence of small mammal burrows. The California range of this species extends from Redding south to San Diego, east through the Mojave Desert, and west to San Francisco and Monterey. The key characteristics of suitable habitat are moderately low and sparse vegetation, a prey base of small mammals during nesting, and burrows or similar sites for shelter. This species occurs at low densities throughout Imperial County, where it is present during both the breeding and non-breeding seasons, as recorded in the CNDDB.

6.2.3 Mammals

6.2.3.1 YUMA HISPID COTTON RAT

Yuma hispid cotton rat is a CDFW Special Status Species. Little is known about this subspecies of cotton rat (Bureau of Reclamation 2016). This small rodent occurs in wetlands and adjacent uplands where it requires dense herbaceous plants for cover and feeding. It feeds on plant material, seeds, and occasionally insects, and nests either above ground or underground in burrows.

The proposed development areas of the project site do not contain suitable habitat for this cotton rat. Suitable habitat appears to be present in some of the vegetated aquatic features immediately adjacent to the site.

7 POTENTIAL IMPACTS AND RECOMMENDATIONS

This section describes the anticipated direct and indirect impacts to biological resources that may result from implementation of the proposed project. This analysis was based on the results of the biological resources surveys conducted at the site, information from literature, and database resources.

Field surveys conducted in the appropriate season(s) will be necessary to verify the flora and fauna on the parcel and within the proposed development envelope and may yield different results.

7.1 Potential Impacts

Project implementation would result in the direct removal of habitat on-site. While the majority of the site is characterized as Disturbed/Ruderal and active agriculture with scattered areas of creosote and white bursage scrub, it could provide foraging habitat for birds and mammals, neither of which are anticipated to be directly impacted by project construction. Because of their mobility, these animals generally move out of harm's way and thus unlikely to be injured or killed during grading and construction.

Nesting birds could occur anywhere within or adjacent to the Project site, and as such could be directly or indirectly impacted during project construction. Pre-construction nest surveys are recommended if work is scheduled during the breeding bird season, generally considered to be from 1 February to 31 August (discussed below in Section 7.2, Recommendations). If found, nests must be protected either by buffer areas or timing to avoid disturbance to active nests. Impacts during operations are not anticipated. There are specific survey requirements for burrowing owls, know to nest in the vicinity. These are described below in Section 7.2, Recommendations.

Indirect impacts to off-site biotic resources are possible during construction (noise, dust), which could temporarily alter the wildlife behavior. However, given that the northern two-thirds of the project site and areas to the west are already highly disturbed, it is likely that the impact to plants and wildlife would be minimal.

7.2 Recommendations

Implementation of the measures described below would reduce potential impacts to less than significant levels.

7.2.1 Nesting Bird Surveys

If activities associated with vegetation removal, construction, or grading are planned during the bird nesting/breeding season (generally February 1 through August 31; January 1 for raptors), a qualified biologist shall conduct surveys for active nests. Preconstruction nesting bird surveys should be conducted weekly beginning 14 days prior to initiation of ground-disturbing activities, with the last survey conducted no more than 3 days prior to the start of clearance/construction work. If ground-disturbing activities are delayed, additional preconstruction surveys should be conducted so that no more than 3 days have elapsed between the survey and ground-disturbing activities.

Active nests found within 100 feet of the construction zone shall be delineated with highly visible construction fencing or other exclusionary material that would inhibit entry by personnel or equipment into the buffer zone. Installation of the exclusionary material will be completed by construction personnel under the supervision of a qualified biologist prior to initiation of construction activities. The buffer zone shall remain intact and maintained while the nest is active (i.e., occupied or being constructed by at least one adult bird) and until young birds have fledged and no continued use of the nest is observed, as determined by a qualified biologist. The barrier shall be removed by construction personnel at the direction of the biologist.

7.2.2 Burrowing Owl Surveys

No more than 14 days prior to the commencement of initial ground-disturbing activities, the applicant shall implement focused pre-construction surveys for burrowing owls. Surveys shall be conducted prior to the initiation of ground disturbance and be conducted by a qualified biologist(s), approved by Imperial

County. Surveys for burrowing owls shall be conducted in conformance with the 2012 CDFW Staff Report on Burrowing Owl Mitigation. Surveys shall be completed within all areas proposed for ground disturbance and vegetation clearing/trimming and a 50-foot buffer surrounding such areas.

Non-breeding Season (September 1 – January 31):

Occupied Burrows: For burrowing owls present during the non-breeding season (generally September 1 through January 31), a 50-foot buffer zone shall be maintained around the occupied burrow(s).

Unoccupied Burrows: Once a burrow has been determined by a qualified wildlife biologist to be unoccupied by burrowing owls, the biologist shall excavate the burrow using hand tools. Sections of flexible plastic pipe or burlap bag shall be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow. One-way doors shall be installed at the entrance to the active burrow and other potentially active burrows within 100 feet of the active burrow and monitored for at least 48 hours after installation.

Breeding Season (February 1 – August 31):

The following avoidance measures shall be implemented for all burrows identified during surveys:

1. Occupied burrows shall not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist verifies through non-invasive methods that either the birds have not begun egg-laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Burrowing owls present on-site after February 1 shall be assumed to be nesting unless evidence indicates otherwise.
2. A 100-foot buffer shall be maintained between project activities and nesting burrowing owls. No activity or entry by personnel or equipment will be allowed within the buffer area.
    a. Physical (temporary fencing) and visual (hay bales or similar) barriers shall be installed to delineate the buffer zone. Installation of the exclusionary material will be completed by construction personnel under the supervision of a qualified biologist prior to initiation of construction activities.
    b. The buffer shall be maintained until August 31 or until the young owls are foraging independently or the nest is no longer active, based upon monitoring evidence.
3. If there is danger that owls will be injured or killed as a result of construction activity, the birds may be passively relocated but only during the non-breeding season; relocation shall require coordination with and approval from the CDFW prior to relocation activities. Relocation of owls during the non-breeding season will be performed by a qualified biologist in coordination with the CDFW.
4. Any damaged or collapsed active burrowing owl burrows will be replaced with artificial burrows in adjacent habitat at a 2:1 ratio.

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APPENDIX A

Site Photos

Figure 1. Parcel 1 - fallow field in southern area (viewing north).

Figure 2. Parcel 1 - active agricultural land in northern area (viewing northeast).

Figure 3. Parcel 2 - creosote-dominated habitat.

Figure 4. East Highline Canal Lateral Eleven north/south extension, between parcels 1 (to east; photo right) and 2 & 3 (viewing north).

	
Figure 5. Parcel 2 – typical desert upland vegetation.	Figure 6. Parcel 3 - abandoned reservoir.

Figure 7. Parcel 1 - burrowing owl perched on concrete standpipe (viewing east).

APPENDIX B

Flora

Vikings Solar Energy Storage Project Site Flora
December 1-3, 2020

	Latin Name & Taxonomic Reference	Vernacular Name
FAMILY		
DICOTS - Flowering Plants		
Asteraceae	**Sunflower Family**	
	Ambrosia dumosa	white bursage
	Ambrosia [*Hymenoclea*] *salsola*	burrobush
	*Atriplex semibaccata**	Australian saltbush
	Baccharis sarothroides	desertbroom baccharis
	Baccharis sergiloides	desert baccharis
	Isocoma acradenia	alkali goldenbush
	*Lactuca serriola**	prickly lettuce
	Pluchea odorata	saltmarsh fleabane
	Pluchea sericea	arow weed
	Sonchus oleraceus	common sow thistle
Chenopodiaceae	**Goosefoot Family**	
	Atriplex canescens	four-wing saltbush
	Atriplex lentiformis	big saltbush
	*Salsola tragus**	Russian thistle, tumbleweed
	Suaeda nigra	bush seepweed
Euphorbiaceae	**Spurge Family**	
	Euphorbia polycarpa	smallseed sandmat
Plantaginacea	**Plantain Family**	
Plantago ovata	desert plantain	
Salicaceae	**Willow Family**	
	Salix exigua	Narrow-leaf willow
Solanaceae	**Nightshade Family**	
	Datura wrightii	Jimson weed
Tamaricaceae	**Tamarix Family**	
	*Tamarix aphylla**	athel tamarisk
	*Tamarix ramosissima**	saltcedar
Zygophyllaceae	**Caltrop Family**	
	Larrea tridentata	creosote bush
MONOCOTS - Grasses and Allies		
Arecaceae	**Palm Family**	
	*Phoenix sp.**	non-native palm
	Washingtonia filifera	California fan palm
Cyperaceae	**Sedge Family**	
	Cyperus odoratus	fragrant flatsedge
Poaceae	**Grass Family**	
	*Avena fatua**	common wild oats
	*Arundo donax**	giant reed
	*Bromus tectorum**	cheatgrass
	Hilaria rigida	big galleta
	Phragmites australis	common reed
	*Schismus barbatus**	Mediterranean grass
Typhaceae	**Cattail Family**	
	Typha latifolia	broadleaf cattail

* Non-Native Species

APPENDIX C

Fauna

Vertebrate Species Observed or Detected on the Vikings Solar Energy Storage Project Site
December 1-3, 2020

SCIENTIFIC NAME	COMMON NAME	NOTES
Reptiles		
Uta stansburiana	side-blotched lizard	
Birds		
Athene cunicularia	burrowing owl	SSC – burrowing sites & some overwintering sites
Buteo jamaicensis	red-tailed hawk	Fly-over
Callipepla gambelii	Gambel's quail	
Charadrius vociferus	killdeer	
Circus hudsonius	Northern harrier	Fly-over
Corvus corax	common raven	Fly-over
Falco sparverius	American kestrel	
Fulica americana	American coot	
Megaceryle alcyon	belted kingfisher	
Zenaida macroura	mourning dove	
Mammals		
Canis latrans	coyote	Scat
Canis lupus familiaris	domestic dog	Tracks; scat (non-native)

SSC: Species of Special Concern; refer to Appendix D, Special Status Species

APPENDIX D

Special-Status Flora & Fauna

Table D-1. Plant Species with Local* Records in the California Natural Diversity Database or California Native Plant Society Rare Plant Inventory and Preliminary Potential for Occurrence

Common Name ***Scientific Name***	**Status[1]**	**Habitat Description**	**Elevation Range; Life Form; Flowering Period**	**Most Recent Record Date**	**Occurrence Potential**
chaparral sand-verbena *Abronia villosa* var. *aurita*	CRPR 1B.1	Sandy areas in chaparral, coastal scrub, desert dunes; full sun. Requires barren ground; does not compete well with weedy species.	60–1570 m AH Jan–Sep	1912	**Unlikely.** Record is historic (>75 years).
Peirson's milk-vetch *Astragalus magdalenae var. peirsonii*	FT; SE; CRPR 1B.2	Slopes & hollows in mobile dunes with desert psammophytic scrub, usually alee of prevailing winds.	60-225 m PH Mar–May	2018	**Low.** Suitable dune habitat is not present.
gravel milk-vetch *Astragalus sabulonum*	CRPR 2B.2	Sandy/gravelly flats, washes & roadsides	60-885 m Jan–Aug AH	1902	**Unlikely.** Record is historic (>75 years).
Wiggin's croton *Croton wigginsii*	SR; CRPR 2B.2	Sand dunes & sandy arroyos with desert psammophytic scrub in Sonoran Desert Scrub.	0-155 m May–Jul S	2019	**Low.** Suitable dune habitat is not present.
Abrams' spurge *Euphorbia abramsiana*	CRPR 2B.2	Sandy sites in Mojavean desert Scrub; Sonoran Desert Scrub habitats.	45-1445 m AH Mar–Sep	1912	**Unlikely.** Record is historic (>75 years).
Algodones Dunes sunflower *Helianthus niveus ssp. tephrodes*	SE; CRPR 1B.2	Partially stabilized sand dunes with desert psammophytic scrub.	90-300 m PH Mar–Sept	2018	**Unlikely.** Suitable dune habitat is not present.
Darlington's blazing star *Mentzelia puberula*	CRPR 2B.2	Sandy crevices in cliffs or on rocky slopes in Mojave Desert Scrub, Sonoran Desert Scrub habitats.	70-1280 m PH Mar-May	1960	**Low.** Suitable habitat is not present.
giant Spanish-needle *Palafoxia arida var. gigantea*	CRPR 1B.3	Active & stabilized sand dunes with desert psammophytic scrub.	20-95 m A/PH Feb-May	2013	**Unlikely.** Suitable dune habitat is not present.
sand food *Pholisma sonorae*	CRPR 1B.2	Loose, deep sand dunes, usually on more stable, windward faces.	0-125 m PH (parasite) Apr–Jun	2018	**Unlikely.** Suitable dune habitat is not present.

*Nine-quad search area included: Alamorio; Holtville NE; Glamis NW; Holtville West; Holtville East (site location); Glamis SW; Calexico; Bonds Corner; and Midway Well NW.

[1]Status:

E =: Endangered	CNPS	Rare Plant Rank	AH	Annual Herb
T =: Threatened	1A	Plants presumed extirpated in California and either rare or extinct elsewhere	AG	Annual Grass
PE =: Proposed Endangered	1B	Plants rare, threatened, or endangered in California and elsewhere	PG	Perennial Grass
PT =: Proposed Threatened	2A	Plants presumed extirpated in California, but more common elsewhere	PH	Perennial Herb
C =: Candidate	2B	Plants rare, threatened, or endangered in California but more common elsewhere	PC	Perennial Cactus
R = Rare		Threat Rank	S	Shrub
	0.1	Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)	Ss	Subshrub
	0.2	Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)	T	Tree
	0.3	Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)		

Table D-2. Wildlife Species with Local* Records in the California Natural Diversity Database and Preliminary Potential for Occurrence

Common Name Scientific Name	Status[1]	Habitat Description	Most Recent Record Date	Occurrence Potential
AMPHIBIANS & REPTILES				
Sonoran Desert toad *Incilius alvarius*	SSC	Found near washes, canals, irrigation ditches, stock ponds, river bottoms, streams, springs; also occurs away from aquatic habitats. Breeds in temporary pools and irrigation ditches.	1912	**Unlikely.** Records (2) are historic (>75 years); however, suitable habitat is present on-site in the two reservoirs, the East Highline Canal, and the East Highline Lateral Eleven.
Sonoran mud turtle *Kinosternon sonoriense*	SSC	Permanent slackwater habitats along intermittent or perennial streams with abundant submergent vegetation & benthic invertebrates.	1941	**Absent.** Record is historic (>75 years); extirpated.
flat-tailed horned lizard *Phrynosoma mcallii*	SSC	Restricted to desert washes & desert flats. Critical habitat element is fine sand into which lizards burrow to avoid temperature extremes. Requires vegetative cover and native harvester ants occur (primary prey).	2017	**Absent.** No suitable habitat is present on the subject property; and native ants were not seen.
Colorado Desert fringe-toed lizard *Uma notata*	SSC	Sand dunes, dry lake beds, sandy beaches/riverbanks, desert washes, sparse desert scrub. Requires fine, loose, windblown sand for burrowing; shrubs or annuals for prey (arthropod) production.	2018	**Unlikely.** No suitable habitat is present on the subject property; and native ants were not seen.
BIRDS				
burrowing owl *Athene cunicularia*	SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	2020	**Present**. One adult was observed during the December 2020 field survey. Suitable habitat is present and they are known to occur in the immediate vicinity.
ferruginous hawk *Buteo regalis*	WL (wintering)	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice.	CNDDB -2003; eBird 2/2014	**Unlikely.** May forage over the site but abundant prey is required for this large raptor, which does not appear to be present on-site.
mountain plover *Charadrius montanus*	SSC	Short grasslands, freshly plowed fields, newly sprouting grain fields; sometimes sod farms. Short vegetation, bare ground, & flat topography; prefers grazed areas & area with burrowing rodents.	2011	**Unlikely.** Record is from the American Canal, about 17 miles NW of project site; suitable habitat is not present.
California black rail *Laterallus jamaicensis coturniculus*	ST; FP	Freshwater marshes, wet meadows shallow margins of saltwater marshes bordering larger bays. Requires water depth of about 1 inch that does not fluctuate during the year and dense vegetation for nesting habitat.	2008	**Unlikely.** Record is from the American Canal, about 6.75 miles south of project site; suitable habitat is not present.
Yuma Ridgway's rail *Rallus obsoletus yumaensis*	FE; ST; FP	Nests in freshwater marshes along Colorado River and south and east ends of Salton Sea. Prefers cattails and tules dissected by narrow channels of flowing water. Primary food is crayfish.	2008	**Unlikely.** Record is from the American Canal, about 7 miles south of project site; suitable habitat is not present.

Common Name Scientific Name	Status[1]	Habitat Description	Most Recent Record Date	Occurrence Potential
yellow warbler *Setophaga petechia*	SSC	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	1921	**Absent.** Record is historic (>75 years); suitable habitat is not present.
MAMMALS				
western mastiff bat *Eumops perotis californicus*	SSC	Utilizes many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	1996	**Unlikely.** Suitable habitat is not present.
western yellow bat *Lasiurus xanthinus*	SSC	Valley foothill riparian, desert riparian, desert wash, & palm oasis habitats. Roosts in trees, particularly palms; forages over water and among trees.	1993	**Unlikely.** Suitable habitat is not present.
pocketed free-tailed bat *Nyctinomops femorosaccus*	SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	1995	**Unlikely.** Suitable habitat is not present.
Yuma hispid cotton rat *Sigmodon hispidus eremicus*	SSC	Along Colorado River & in grass, agricultural areas near irrigation waters. Wetlands & uplands with dense grass & herbaceous plants. Makes runways through vegetation; nests on surface and in burrows. Two adult males found in 2007 in tamarisk scrub adjacent to an irrigation canal, about 0.55 mile NW of project site in similar habitat; 2009 record about 4.7 miles NNW of site.	2009	**Unlikely (on-site). Moderate off-site.** No suitable habitat is present on the project site. Suitable habitat appears to be present in the aquatic resource areas immediately adjacent to the site.
American badger *Taxidea taxus*	SSC	Drier open stages of most shrub, forest & herbaceous habitats with friable soils. Need sufficient food, friable soils & open, uncultivated ground. Preys on burrowing rodents; digs burrows.	1922	**Absent.** Record is historic (>75 years); suitable habitat is not present.

*Nine-quad search area included: Alamorio; Holtville NE; Glamis NW; Holtville West; Holtville East (site location); Glamis SW; Calexico; Bonds Corner; and Midway Well NW.

[1]Status Key

Federal (USFWS) Status
- FE: Federally Endangered
- FT: Federally Threatened

State (CDFW) Status
- SE: State Endangered
- ST: State Threatened
- SC: State Candidate
- FP: Fully Protected
- SSC: Species of Special Concern
- WL: Watch List

Biological Resources Assessment

Vikings Solar Energy Storage Project

Imperial County, California

JANUARY 2021

PREPARED FOR

Vikings Energy Farm, LLC

PREPARED BY

SWCA Environmental Consultants

WOMS

BIOLOGICAL RESOURCES ASSESSMENT
VIKINGS SOLAR ENERGY STORAGE PROJECT, IMPERIAL COUNTY, CALIFORNIA

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SWCA Project No. 64085

January 2021

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1 INTRODUCTION

Vikings Energy Farm, LLC (Applicant), retained SWCA Environmental Consultants (SWCA) to conduct a biological resources assessment in support of the proposed Vikings Solar Energy Storage Project (project) in Imperial County, California (county). The Applicant proposes to develop a 100-megawatt alternating current solar photovoltaic (PV) energy generation project with an integrated 100-megawatt/400-megawatt-hours battery storage project on approximately 603.61 acres of land. The following assessment was conducted to analyze the project's potential impacts on biological resources that may be located in the project area, in compliance with the California Environmental Quality Act (CEQA).

2 PROJECT DESCRIPTION AND LOCATION

The project site is located at the intersection of E. Nelson Pit Road and Graeser Road, approximately 5.5 miles east of the city of Holtville and 15 miles east of the city of El Centro in Section 36 of Township 15 South and Range 16 East of the San Bernardino Base and Meridian of the Holtville East U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (**Error! Reference source not found.**–4). The project is located on Imperial County Assessor's Parcel Numbers (APNs) 050-070-018-000 (approximately 480 acres), 050-070-019 (approximately 80 acres), and 050-070-021 (approximately 44 acres), owned by RL&R Strahm, ARB Inc., and the County of Imperial, respectively.

The project proposes to utilize solar photovoltaic (PV technology modules mounted on fixed frames or horizontal single-axis tracker (HSAT) systems. The fixed-frame PV module arrays would be mounted on racks that would be supported by driven piles, arranged in arrays spaced approximately 15 to 25 feet apart (pile to pile) to maximize performance and to allow access for panel cleaning. These arrays would be separated from each other and the perimeter security fence by up to 30-foot-wide interior roads.

Electricity generated by the PV modules would be collected by a direct current (DC) collection system routed underground in trenches. This DC power would be delivered to one of the pad-mounted inverters in weatherproof enclosures located within the arrays. Underground or overhead 12.5-kilovolt (kV) or 34.5-kV collection lines would transmit the electricity to the new on-site substation, proposed to be located on the southern boundary of APN 050-070-019. A new interconnection switching station would be constructed at the southern boundary of APN 050-070-019, immediately adjacent to the project substation. The project substation and interconnection switching station would be connected via a single overhead 230-kV tie line. The interconnection switching station would be enclosed within its own fence.

To connect to the project's interconnection facilities, the medium voltage power produced by the project would be conveyed underground, or above ground where necessary, to cross over any sensitive site features. Distribution from the site would be via an overhead connection. The electrical energy produced by the project would be conducted through the project interconnection facilities to the proposed 230-kV generator intertie (gentie) line and delivered to the existing Imperial Irrigation District (IID) approved point of interconnection (POI) on the 230-kV KN & KS Line. The proposed battery energy storage system (BESS or ESS) would be constructed adjacent to the project's solar facilities and would consist of either lithium ion (Li-ion) or flow batteries. Underground trenches with conduits would be used to connect the batteries to the control and monitoring systems, and inverters would be used to convert the PV-produced DC power to alternating current power.

The proposed battery energy storage system (BESS or ESS) would be constructed adjacent to the projects solar facilities and would consist of either lithium ion (Li-ion) or flow batteries. The batteries will either

be housed in storage containers or buildings fitted with heating, ventilation and air conditioning (HVAC) and fire suppression systems as necessary, depending on the final selection of battery technology. Inside

Figure 1. Vicinity map.

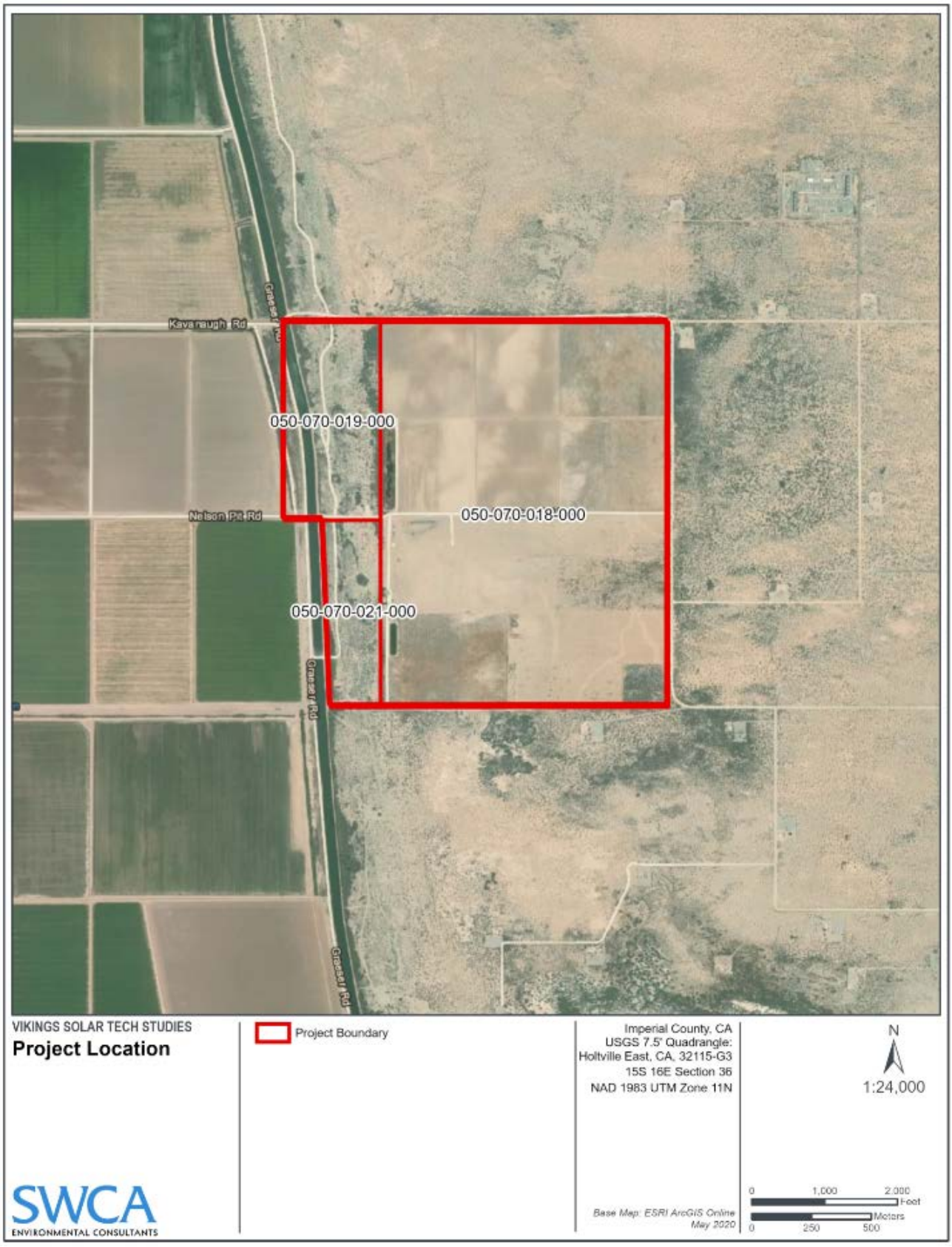

Figure 2. Project location.

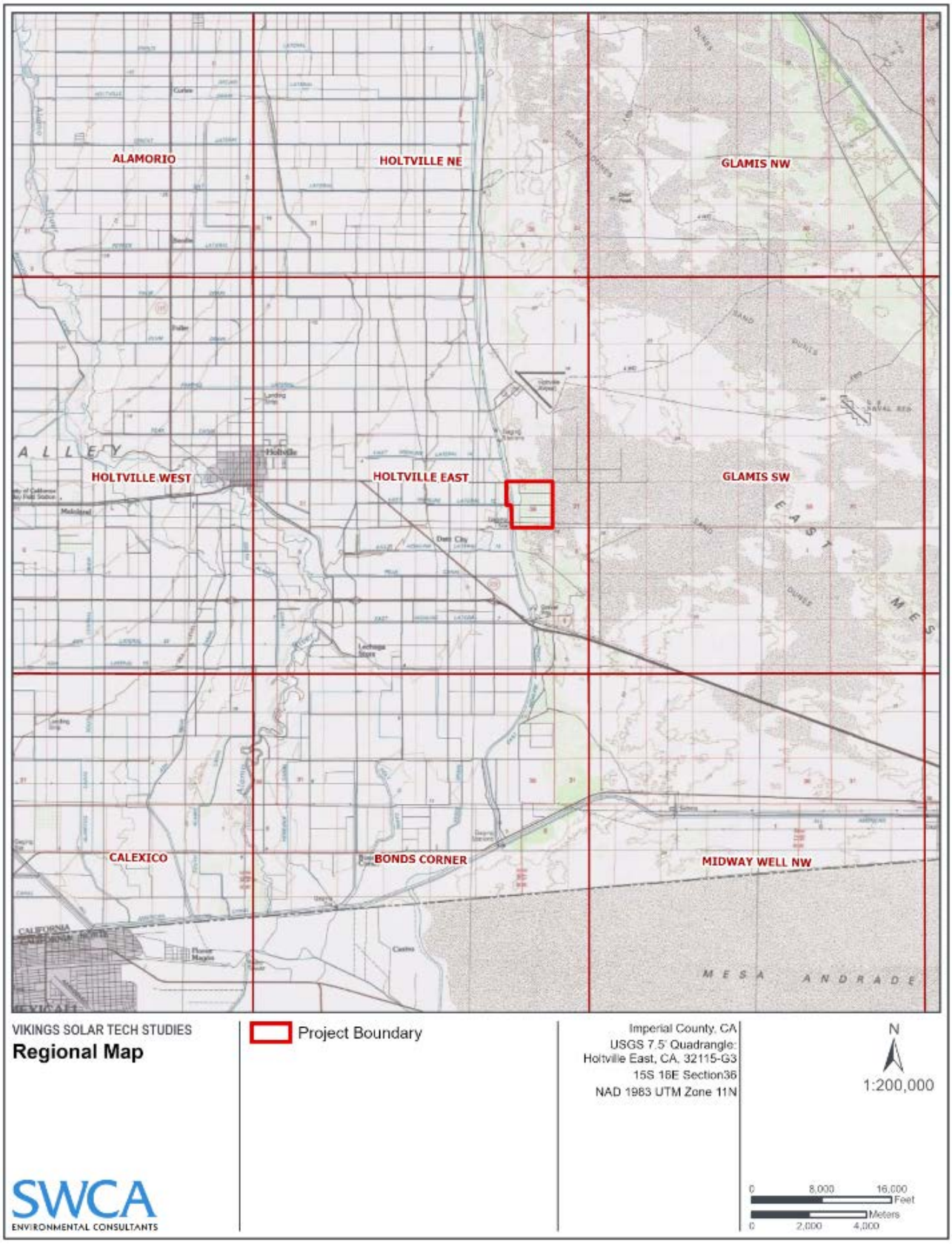

Figure 3. Topographic map.

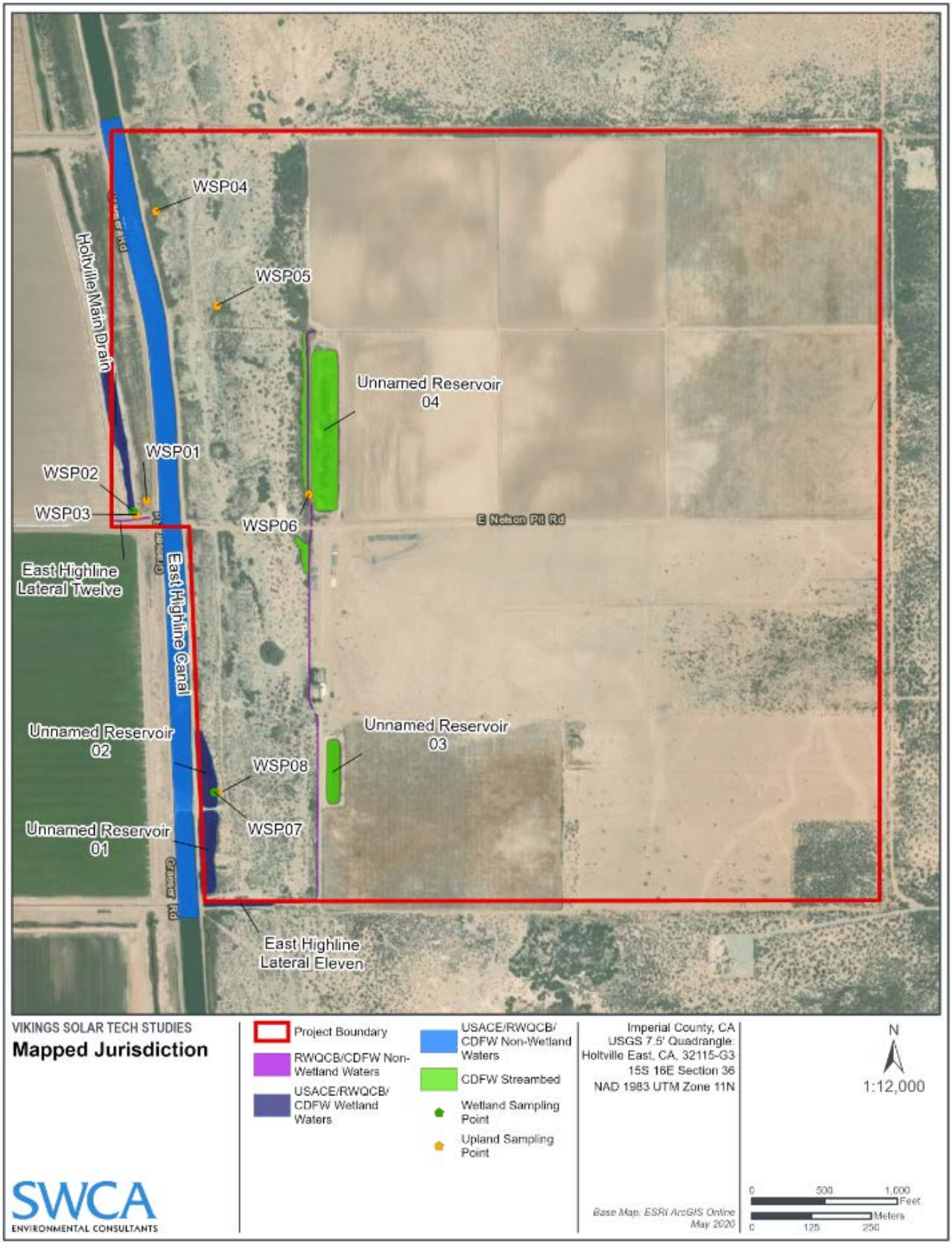

Figure 4. Site plan with aquatic features.

the housing the batteries will be placed on racks, the orientation of which depends on the type of housing. Underground trenches with conduits will be used to connect the batteries to the control and monitoring systems, and inverters to convert the PV produced DC power to AC power.

Six-foot-high security fencing would be installed around the perimeter of each of the project sites at the commencement of construction, and site access would be limited to authorized site workers.

2.1 Site Characteristics

The project lies in the Colorado Desert, a subregion within the larger Sonoran Desert. The region is characterized by very low rainfall (2–3 inches per year), which occurs during winter and the summer monsoon. High temperatures may reach 120ºF or higher, and winter lows are rarely below freezing. The region is generally low in elevation and flat, with extremes of 275 feet below sea level and peaks up to about 10,000 feet.

The project site is generally level, ranging from about 23 to 45 feet above mean ground level. Surrounding land uses include active agriculture (farmed cropland) to the west and undeveloped open space to the north, south, and east. Appendix A provides representative photographs.

The project site is composed of three parcels. Parcel 1 (APN 050-070-018-000) is the largest of the three parcels comprising the project site, stretching from Kavanaugh Road in the north to East Highline Lateral Eleven in the south and west, and east to the project boundary. Two agricultural reservoirs are present along the western boundary of this parcel, with one immediately north of E. Nelson Pit Road and the second near the southwest corner of the parcel. Current land use consists of a mix of actively farmed agricultural land in the north and northwest, and fallow fields that do not appear recently farmed along the southern and eastern edges. Native vegetation cover types are not present in most of the fields; however, creosote bush (*Larrea tridentata*) is present as the predominant species in the southeastern corner of the parcel.

Parcel 2 (APN 050-070-019-000) is in the northwest quadrant of the project site, extending west across Graeser Road, East Highline Canal, and Holtville Main Drain, north to Kavanaugh Road, and south to E. Nelson Pit Road. The East Highline Lateral Eleven canal lies along the border between this parcel and Parcel 1. The parcel is composed of primarily disturbed/ruderal upland desert vegetation, with a mix of riparian/upland species near the canals. Upland vegetation consists of creosote bush, alkali goldenbush (*Isocoma acradenia*), common Mediterranean grass (*Schismus barbatus*), and sparsely scattered California fan palms (*Washingtonia filifera*).

Parcel 3 (APN 050-070-021-000) is in the southwest corner of the project site, with E. Nelson Pit Road along the north and the East Highline Lateral Eleven canal on the s. Two abandoned reservoirs are situated north of the East Highline Lateral Eleven canal in the southern and southwestern portions of the parcel. Disturbed/ruderal upland desert vegetation is the dominant cover type, with riparian vegetation surrounding reservoirs. The upland vegetation cover type is the same as found on Parcel 2. Riparian vegetation consists of broadleaf cattail (*Typha latifolia*), arrowweed (*Pluchea sericea*), giant wild rye (*Arundo donax*), and saltcedar (*Tamarix* sp.).

Aquatic resources are described in more detail in a separate aquatic resources report (SWCA 2021). Figure 4 illustrates the location and jurisdiction of each identified feature.

3 REGULATORY SETTING

The following discussion summarizes federal, state, and local laws, regulations, and policies relating to plants, wildlife, and special-status habitats. Regulations covering aquatic resources (wetlands, ponds, streams, etc.) are excluded and are discussed in a separate aquatic resources report (SWCA 2021). Only those regulations potentially applicable to the proposed project are included herein.

3.1 Federal Regulations

3.1.1 Federal Endangered Species Act

The U.S. Congress passed the Endangered Species Act (ESA) in 1973 to protect endangered species and species threatened with extinction (federally listed species). The ESA operates in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

Section 9 of the ESA prohibits the "take" of endangered or threatened wildlife species. The legal definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 United States Code [USC] 1532 [19]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 Code of Federal Regulations [CFR] 17.3). Harassment is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR 17.3). Actions that result in take can result in civil or criminal penalties.

The U.S. Fish and Wildlife Service (USFWS) is authorized to issue permits under Sections 7 and 10 of the ESA. Section 7 mandates that all federal agencies consult with the USFWS for terrestrial species and/or National Marine Fisheries Service (NMFS) for marine species to ensure that federal agency actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat for listed species. Any anticipated adverse effects require preparation of a biological assessment to determine potential effects of the project on listed species and critical habitat. If the project adversely affects a listed species or its habitat, the USFWS or NMFS prepares a Biological Opinion. The Biological Opinion may recommend "reasonable and prudent alternatives" to the project to avoid jeopardizing or adversely modifying habitat including "take" limits.

The ESA defines critical habitat as habitat deemed essential to the survival of a federally listed species. The ESA requires the federal government to designate "critical habitat" for any species it lists under the ESA. Under Section 7, all federal agencies must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or destroy or adversely modify its designated critical habitat. These complementary requirements apply only to federal agency actions, and the latter apply only to specifically designated habitat. A critical habitat designation does not set up a preserve or refuge, and applies only when federal funding, permits, or projects are involved (i.e., a federal nexus). Critical habitat requirements do not apply to activities on private land that do not involve a federal nexus.

Section 10 of the ESA includes provisions to authorize take that is incidental to, but not the purpose of, activities that are otherwise lawful. Under Section 10(a)(1)(B), the USFWS may issue permits (incidental take permits) for take of ESA-listed species if the take is incidental and does not jeopardize the survival and recovery of the species. To obtain an incidental take permit, an applicant must submit a habitat conservation plan outlining steps to minimize and mitigate permitted take impacts to listed species.

3.1.2 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) prohibits any person, unless permitted by regulations, to

> …pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatsoever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention … for the protection of migratory birds ... or any part, nest, or egg of any such bird. (16 USC 703)

The list of migratory birds includes nearly all bird species native to the United States. The statute was extended in 1974 to include parts of birds, as well as eggs and nests. The Migratory Bird Treaty Reform Act of 2004 further defined species protected under the MBTA and excluded all non-native species. Thus, it is illegal under the MBTA to directly kill or destroy a nest of nearly any native bird species.

3.1.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668–668c) prohibits anyone from "taking" bald eagles (*Haliaeetus leucocephalus*), including their parts, nests, or eggs, without a permit issued by the Secretary of the Interior. In 1962, Congress amended the act to cover golden eagles (*Aquila chrysaetos*). The BGEPA provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The BGEPA defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The 1962 amendments included a specific exemption for possession of eagles for religious purposes of Native American tribes; however, an Indian Religious Permit is required.

On November 10, 2009, the USFWS implemented new rules under the existing BGEPA, requiring USFWS permits for all activities that may disturb or incidentally take an eagle or its nest as a result of an otherwise legal activity. Under USFWS rules (16 USC § 22.3; 72 Federal Register 31,132, June 5, 2007), "disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits and causes injury, death, or nest abandonment.

3.2 State Regulations

3.2.1 California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act (CESA), which prohibits the "taking" of listed species except as otherwise provided in state law. Section 86 of the Fish and Game Code defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Under certain circumstances, the CESA applies these take prohibitions to species petitioned for listing (state candidates). Pursuant to the requirements of the CESA, state lead agencies (as defined under CEQA Public Resources Code Section 21067) are required to consult with the CDFW to ensure that any action or project is not likely to jeopardize the continued

existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat. Additionally, the CDFW encourages informal consultation on any proposed project that may impact a candidate species. The CESA requires the CDFW to maintain a list of threatened and endangered species. The CDFW also maintains a list of candidates for listing under the CESA and of species of special concern (or watch list species).

3.2.2 Fully Protected Species

The California Fish and Game Code provides protection from take for a variety of species, referred to as fully protected species. Section 5050 lists protected amphibians and reptiles, and Section 3515 prohibits take of fully protected fish species. Eggs and nests of fully protected birds are protected under Section 3511. Migratory non-game birds are protected under Section 3800, and mammals are protected under Section 4700. Except for take related to scientific research, all take of fully protected species is prohibited.

3.2.3 Nesting Birds and Raptors

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 provides protection for all birds of prey, including their eggs and nests.

3.2.4 Migratory Bird Protection

Take or possession of any migratory non-game bird as designated in the MBTA is prohibited by Section 3513 of the Fish and Game Code.

3.2.5 Bats

Fish and Game Code Section 4150 prohibits the take of bats, regardless of their listing status.

3.2.6 California Environmental Quality Act

The CEQA was adopted in 1970 and applies to discretionary actions directly undertaken, financed, or permitted by state or local government lead agencies. CEQA requires that a project's effects on environmental resources must be analyzed and assessed using criteria determined by the lead agency. CEQA defines a rare species in a broader sense than the definitions of threatened, endangered, or California species of concern. Under this definition, the CDFW can request additional consideration of species not otherwise protected.

3.2.7 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (Fish and Game Code Section 1900-1913) directed the California Department of Fish and Game (now known as CDFW) to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protected endangered and rare plants from take. The NPPA thus includes measures to preserve, protect, and enhance rare and endangered native plants.

The CESA has largely superseded the NPPA for all plants designated as endangered by the NPPA. The NPPA nevertheless provides limitations on take of rare and endangered species as follows: "...no person

will import into this state, or take, possess, or sell within this State" any rare or endangered native plant, except in compliance with provisions of the CESA. Individual landowners are required to notify the CDFW at least 10 days in advance of changing land uses to allow the CDFW to salvage any rare or endangered native plant material.

3.2.7.1 CALIFORNIA DESERT NATIVE PLANTS ACT

The California Desert Native Plants Act protects non-listed California desert native plants from unlawful harvesting on public and private lands in the counties of Riverside, San Bernardino, Imperial, Inyo, Kern, Los Angeles, Mono, and San Diego (California Food and Agriculture Code, Sections 80001-80006, Division 23). A wide range of desert plants is protected under this act, including all species in the agave and cactus families. Harvest, transport, sale, or possession of specific native desert plants is prohibited without a valid permit or wood receipt and the required tags and seals. Species listed as rare, endangered, or threatened under federal or state law or regulations are excluded from this provision.

3.3 Federal, Regional, and Local Conservation Plans

There are no federal, state, or local parks or designated wildlife corridors or conservation areas on or adjacent to the subject property. Similarly, there are no USFWS-designated critical habitat or Habitat Conservation Plan and no CDFW Natural Community Conservation Plan at or adjacent to the project site.

3.3.1 Imperial County General Plan: Conservation and Open Space Element

The Imperial County General Plan contains the Conservation and Open Space Element (Imperial County 2016), which defines policies intended to conserve and protect the county's environmental resources, including biological resources, while encouraging economic development and growth. This Element lists the following four purposes:

- *Promote the protection, maintenance, and use the County's natural and cultural resources with particular emphasis on scarce resources and resources that require special control and management.*
- *Prevent the wasteful exploitation, destruction, and neglect of the State's natural and cultural resources.*
- *Recognize that natural resources must be maintained for their ecological value, as well as for the direct benefit to the public.*
- *Protect open space for the conservation of natural and cultural resources, the managed production of resources, outdoor recreation, and public health and safety.*

The Element defines goals specific to the conservation of biological resources:

> *Goal 1: Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions and educating the public on their value.*
>
> > *Objective 1.1: Encourage uses and activities that are compatible with the fragile desert environment and foster conservation.*
> >
> > *Objective 1.2: Coordinate the acquisition, designation, and management of important natural and cultural resource areas in Imperial County with other governmental agencies as appropriate.*

Objective 1.3: Develop standards to protect significant natural and cultural resource areas for the purpose of enhancing both the planning and decision-making process.

Objective 1.4: Ensure the conservation and management of the County's natural and cultural resources.

Objective 1.5: Provide opportunities for enjoyment of a quality natural experience to present and future generations.

Objective 1.6: Promote the conservation of ecological sites and preservation of cultural resource sites through scientific investigation and public education.

Goal 2: The County will integrate programmatic strategies for the conservation of critical habitats to manage their integrity, function, productivity, and long-term viability.

Objective 2.1: Designate critical habitats for federally listed and state-listed species.

Objective 2.2: Develop management programs, including preservation of habitat for flat-tailed horned lizard, desert pupfish, and burrowing owl.

Objective 2.3: Support investigation of long-term climate change effects on biological resources.

Objective 2.4: Use the CEQA and NEPA process to identify, conserve, and restore sensitive vegetation and wildlife resources.

Objective 2.5: Give conservation of sensitive species and habitat a high priority in County park acquisition and development programs.

Objective 2.6: Attempt to identify, reduce, and eliminate all forms of pollution; including air, noise, soil, and water.

The county defines policies and programs to implement these goals and objectives:

***Policy:** Provide a framework for the conservation and enhancement of natural and created open space, which provides wildlife habitat values.*

- *Identify Resource Areas to conserve and enhance native vegetation and wildlife. These areas include agency-designated sensitive habitats with the USFWS, Bureau of Land Management Areas of Critical Environmental Concern, and CDFW. These designated lands are designed for the protection and perpetuation of rare, endangered, and threatened species and areas important for scientific study.*
- *Projects within or in the vicinity of a Resource Area should be designed to minimize adverse impacts on the biological resources it was created to protect.*
- *Accept donations of land which have high wildlife value. Where appropriate, Imperial County shall attempt to exchange donated lands of high wildlife value with other state, federal, or other resource agencies equipped to protect and manage such lands for other lands more appropriate to County needs.*
- *Develop an environmental mitigation program that protects and restores Salton Sea wildlife habitats as offsets to biological disturbances identified through the CEQA review process for development projects. The program would allow the County and/or Salton Sea Joint Powers Agreement (JPA) to restore habitat through financing mechanisms including land banks and/or direct financial contributions from the developers to mitigate their impacts.*

- *Conserve the native habitat of sensitive plants and animals through the dedication of open space easements, or other means that will ensure their long-term protection and survival. Such easements may preclude the erecting of any structures (temporary or permanent), vegetation removal, or any other activities. These dedicated open space easements would also serve to reduce potential indirect impacts to sensitive biological resources that may result from human activities associated with future developments.*
- *Areas designated for biological open space conservation shall include buffers, which provide important breeding and foraging habitats for native and migratory birds and animals. Such buffers shall serve to separate future development from adjacent native habitat areas to ensure the perpetual regeneration of these habitats.*
- *Protect riparian habitat and other types of wetlands from loss or modification by dedicating open space easements with adequate buffer zones, and by other means to avoid impacts from adjacent land uses. Road crossings or other disturbances of riparian habitat should be minimized and only allowed when alternatives have been considered and determined infeasible.*
- *Rock outcrops which serve as significant boulder habitat for sensitive biological resources should be considered within open space easements.*
- *Preserve existing California fan palms in natural settings and other individual specimen trees which contribute to the community character and provide wildlife habitat.*
- *Preserve and encourage the open space designation of wildlife corridors, which are essential to the long-term viability of wildlife populations.*
- *Integrate open space dedications in private developments with surrounding uses to maximize a functional open space/recreation and wildlife management system.*

4 METHODOLOGY

4.1 Literature Review

The literature review consisted of reviewing publicly available spatial data from a variety of public agencies, geospatial data warehouses, and previously written reports related to the project area and surrounding nine-quadrangle buffer area to ensure that current and accurate data were integrated into the review. The nine USGS 7.5' topographic quadrangles queried in this search were Alamorio; Holtville NE; Glamis NW; Holtville West; Holtville East (site location); Glamis SW; Calexico; Bonds Corner; and Midway Well NW.

Pertinent sources reviewed included, but were not limited to, the following:

- CDFW California Natural Diversity Database (CNDDB) RAREFIND 5
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants
- eBird online database of bird distribution and abundance
- USFWS Critical Habitat Mapper and File Data
- Google Earth aerial imagery

4.2 Field Surveys

A reconnaissance-level flora and fauna survey of the project site was completed by SWCA biologist Marshall Webb on December 1 and 2, 2020. Survey goals were to characterize the existing biological conditions, preliminarily assess the site's potential to support special-status plant and wildlife species and document the occurrence of such species. Existing biological conditions were noted, and comprehensive lists of identified plant and wildlife species were compiled (Appendices B and C).

This survey should be considered preliminary since late fall is not the optimal time of year for biological surveys. Multi-season, focused, and/or protocol surveys may be necessary in the correct season(s) to fully identify the project's flora and fauna.

4.2.1 Assessment of Special-Status Species Potential

Special-status species are plants and animals in one or more of the following categories:

- Species listed or proposed for listing as threatened or endangered under the federal ESA (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under the ESA (67 Federal Register 40657, June 13, 2002).
- Species listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 California Code of Regulations [CCR] 670.5).
- Species that meet the definitions of rare or endangered under the CEQA (State CEQA Guidelines Section 15380).
- Plants listed as rare under the California Native Plant Protection Act (California Department of Fish and Game Code Section 1900 et seq.).
- Plants considered by the CNPS to be "rare, threatened, or endangered in California" (Lists 1B and 2).
- Animals fully protected in California (California Fish and Game Code Sections 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).
- Animals listed on the California Special Animals List such as Species of Special Concern, Fully Protected, and for invertebrates, all species regardless of the reason for inclusion (CDFW November 2020).

5 FINDINGS

5.1 Vegetation

The majority of the project site, including the northern and northwestern portions, is under active cultivation. The southern areas are fallow agricultural lands, characterized by expanses of disturbed sandy soils with mostly non-native plants, such as Mediterranean grass and Saharan mustard (*Brassica tournefortii*). Typical native plant species encountered were creosote bush, white bursage (*Ambrosia dumosa*), burrobush (*Ambrosia* [*Hymenoclea*] *salsola*) and widely scattered California fan palm. Pockets of natural vegetation are scattered about the southern and western areas, with creosote bush and

white bursage scrub occurring in generally sparse relative cover. The generally sparse understory includes mostly non-native annual grasses such as Mediterranean grass and cheatgrass (*Bromus tectorum*).

Aquatic resources areas immediately adjacent to the project site support native and non-native plant communities, including Sandbar Willow (*Salix exigua*) Shrubland Alliance and Saltbush Scrub/Shadscale Scrub, the latter containing plants in the saltbush genus *Atriplex*. Other common native plants include arrowweed (*Pluchea* spp.), broadleaf cattail (*Typha latifolia*), fragrant flatsedge (*Cyperus odoratus*), and common red (*Phragmites australis*). Non-native and invasive saltcedar and Athel tamarisk (*Tamarix aphylla*) are common.

5.2 Wildlife

Few species of wildlife were observed or detected during the December 2020 field survey, due to a combination of the time of year and the lack of well-developed natural habitats on-site. The only reptile seen were a few side-blotched lizards (*Uta stansburiana*). Birds seen included mourning dove (*Zenaida macroura*), killdeer (*Charadrius vociferus*), and American coot (*Fulica americana*), along with fly-over sightings of red-tailed hawk (*Buteo jamaicensis*) and common raven (*Corvus corax*). One western burrowing owl (*Athene cunicularia*) was sighted; this species is discussed separately below. Appendix C provides a list of wildlife detected on the subject property.

Wildlife common to the Colorado Desert are expected to utilize areas of the subject property where suitable habitat occurs, such as areas with at least moderate vegetation and near aquatic resources. Reptiles (lizards and snakes) including western zebra-tailed lizard (*Callisaurus draconoides rhodostictus*) and sidewinder (*Crotalus cerastes*) and birds such as killdeer (*Charadrius vociferus*), mourning dove (*Zenaida macroura*), white-winged dove (*Zenaida asiatica*), Gambel's quail (*Callipepla gambelii*), and raptors such as red-tailed hawk are likely to occur on-site. Nesting habitat is limited to ground- and shrub-nesting birds, as tree habitat is not present except for in the widely scattered California fan palms. Mammals such as black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*,) and coyote (*Canis latrans*) may also be present.

5.3 Wildlife Movement Corridors and Habitat Linkages

Wildlife corridors and habitat linkages are features that promote habitat connectivity. Wildlife corridors are typically discrete linear features within a landscape that are constrained by development or other non-habitat areas. Habitat linkages are networks of corridors through and between larger natural open space that facilitate movement of wildlife, thus providing long-term resilience of ecosystems against the detrimental effects of habitat fragmentation. Regional connection between high-quality open space habitats is critical to ongoing interchange of genetic material between populations, wildlife movement to escape natural disasters (fires, floods), colonization and expansion of populations, and plant propagation.

The project site currently provides unrestricted wildlife movement for animals of all sizes within the property.

6 SPECIAL-STATUS FLORA AND FAUNA

Appendix D lists the special-status plant and animal species previously reported as occurring on the Holtville East USGS quadrangle where the project lies and the eight quadrangles surrounding it: Alamorio; Holtville NE; Glamis NW; Holtville West; Glamis SW; Calexico; Bonds Corner; and Midway Well NW.

The relative occurrence potential shown on these tables is based on habitat suitability, current natural resource conditions of the project site, general knowledge of the project region, distance to known CNDDB and CNPS observation records, and the age of the records. Each occurrence potential rating is defined as follows:

- Present: Species has recently been documented on-site.
- High: Species has been documented on-site or adjacent to the project boundaries, habitat is suitable in the project area, and records are recent (within 20 years).
- Moderate: Project area is within known range of the species, habitat is suitable in the project area, and records are non-historic (within 40 years).
- Low: Project area is within known range of the species, habitat is marginal, records are distant, or known records are older (within 75 years).
- Unlikely: Project area is outside of known range of the species, records are distant, and/or there is no suitable habitat in the project area.
- Absent: Species has been extirpated; records are historic (greater than 75 years), no suitable habitat.

6.1 Special-Status Flora

Special-status flora include taxa listed as endangered or threatened under the federal ESA, the CESA, or both. This term "special-status" also includes plant species listed by the state as rare and those species listed by the CNPS with a Rare Plant Rank (RPR) of 1 or 2 on the most current CDFW "*Special Vascular Plants, Bryophytes, and Lichens List*" (CDFW, September 2020).

The literature search identified nine special-status plant species in the search area. Appendix D-1 lists the preliminary potential for occurrence for each special-status species within the project area. The occurrence potential is considered to be low to unlikely for all of these, based on habitat conditions within the project site.

No special-status plant species were identified during the December 2020 field survey; however, late fall is not the optimal season for floristic surveys.

6.2 Special-Status Fauna

Special-status fauna include species or subspecies listed as endangered, threatened, or candidate for listing as endangered or threatened under the federal ESA, the CESA, or both. All wildlife species designated by the CDFW as Fully Protected, Species of Special Concern, or Watch List species, as well as other wildlife included in the most current CDFW "Special Animals" list, are also included (CDFW 2020).

Fifteen special-status species of fauna were reported in the literature as occurring within the nine-quadrangle search area, with the subject property in the center. One special-status wildlife species was found on-site during the December 2020 survey, a western burrowing owl (non-nesting).

One mammal, the Yuma hispid cotton rat (*Sigmodon hispidus eremicus*), is considered to be unlikely to occur on the project site, and to have a moderate potential for occurrence near the project site (discussed in detail below). This finding is based solely on habitat conditions found during the December 2020 field survey, previous records, habitat conditions on and immediately adjacent to the project site.

6.2.1 Nesting Birds

The field survey occurred outside of the nesting season (February 1 to August 31) and no nesting bird activity was detected. However, there is potential nesting habitat within the shrubs and low vegetation in the southern third of the project site (outside areas of active agricultural land uses). Higher quality nesting habitat is present immediately adjacent to the site in the riparian habitats associated with aquatic features.

6.2.2 Birds

6.2.2.1 BURROWING OWL

Burrowing owl (*Athene cunicularia*), also called western burrowing owl, is a CDFW Special-Status Species that occupies open areas of the desert and high desert and is frequently encountered in Imperial County. This small owl occurs in a wide range of mostly open habitats in California, including grasslands, shrub-steppe, deserts, pastures, and agricultural areas.

One burrowing owl was observed at an active burrow in the southeastern portion of APN 050-070-018-000. The burrow consists of an old concrete agricultural standpipe. Burrowing owls are known to utilize a range of artificial and natural burrows. The individual owl found during this field survey is a wintering individual, possibly a transient. Although protected, the presence of this owl is not a fatal flaw to project development. Suitable habitat for burrowing owl includes short vegetation and, in the breeding season, the presence of small mammal burrows. The California range of this species extends from Redding south to San Diego, east through the Mojave Desert, and west to San Francisco and Monterey. The key characteristics of suitable habitat are moderately low and sparse vegetation, a prey base of small mammals during nesting, and burrows or similar sites for shelter. This species occurs at low densities throughout Imperial County, where it is present during both the breeding and non-breeding seasons, as recorded in the CNDDB.

6.2.3 Mammals

6.2.3.1 YUMA HISPID COTTON RAT

Yuma hispid cotton rat is a CDFW Special Status Species. Little is known about this subspecies of cotton rat (Bureau of Reclamation 2016). This small rodent occurs in wetlands and adjacent uplands where it requires dense herbaceous plants for cover and feeding. It feeds on plant material, seeds, and occasionally insects, and nests either above ground or underground in burrows.

The proposed development areas of the project site do not contain suitable habitat for this cotton rat. Suitable habitat appears to be present in some of the vegetated aquatic features immediately adjacent to the site.

7 POTENTIAL IMPACTS AND RECOMMENDATIONS

This section describes the anticipated direct and indirect impacts to biological resources that may result from implementation of the proposed project. This analysis was based on the results of the biological resources surveys conducted at the site, information from literature, and database resources.

Field surveys conducted in the appropriate season(s) will be necessary to verify the flora and fauna on the parcel and within the proposed development envelope and may yield different results.

7.1 Potential Impacts

Project implementation would result in the direct removal of habitat on-site. While the majority of the site is characterized as Disturbed/Ruderal and active agriculture with scattered areas of creosote and white bursage scrub, it could provide foraging habitat for birds and mammals, neither of which are anticipated to be directly impacted by project construction. Because of their mobility, these animals generally move out of harm's way and thus unlikely to be injured or killed during grading and construction.

Nesting birds could occur anywhere within or adjacent to the Project site, and as such could be directly or indirectly impacted during project construction. Pre-construction nest surveys are recommended if work is scheduled during the breeding bird season, generally considered to be from 1 February to 31 August (discussed below in Section 7.2, Recommendations). If found, nests must be protected either by buffer areas or timing to avoid disturbance to active nests. Impacts during operations are not anticipated. There are specific survey requirements for burrowing owls, know to nest in the vicinity. These are described below in Section 7.2, Recommendations.

Indirect impacts to off-site biotic resources are possible during construction (noise, dust), which could temporarily alter the wildlife behavior. However, given that the northern two-thirds of the project site and areas to the west are already highly disturbed, it is likely that the impact to plants and wildlife would be minimal.

7.2 Recommendations

Implementation of the measures described below would reduce potential impacts to less than significant levels.

7.2.1 Nesting Bird Surveys

If activities associated with vegetation removal, construction, or grading are planned during the bird nesting/breeding season (generally February 1 through August 31; January 1 for raptors), a qualified biologist shall conduct surveys for active nests. Preconstruction nesting bird surveys should be conducted weekly beginning 14 days prior to initiation of ground-disturbing activities, with the last survey conducted no more than 3 days prior to the start of clearance/construction work. If ground-disturbing activities are delayed, additional preconstruction surveys should be conducted so that no more than 3 days have elapsed between the survey and ground-disturbing activities.

Active nests found within 100 feet of the construction zone shall be delineated with highly visible construction fencing or other exclusionary material that would inhibit entry by personnel or equipment into the buffer zone. Installation of the exclusionary material will be completed by construction personnel under the supervision of a qualified biologist prior to initiation of construction activities. The buffer zone shall remain intact and maintained while the nest is active (i.e., occupied or being constructed by at least one adult bird) and until young birds have fledged and no continued use of the nest is observed, as determined by a qualified biologist. The barrier shall be removed by construction personnel at the direction of the biologist.

7.2.2 Burrowing Owl Surveys

No more than 14 days prior to the commencement of initial ground-disturbing activities, the applicant shall implement focused pre-construction surveys for burrowing owls. Surveys shall be conducted prior to the initiation of ground disturbance and be conducted by a qualified biologist(s), approved by Imperial

County. Surveys for burrowing owls shall be conducted in conformance with the 2012 CDFW Staff Report on Burrowing Owl Mitigation. Surveys shall be completed within all areas proposed for ground disturbance and vegetation clearing/trimming and a 50-foot buffer surrounding such areas.

Non-breeding Season (September 1 – January 31):

Occupied Burrows: For burrowing owls present during the non-breeding season (generally September 1 through January 31), a 50-foot buffer zone shall be maintained around the occupied burrow(s).

Unoccupied Burrows: Once a burrow has been determined by a qualified wildlife biologist to be unoccupied by burrowing owls, the biologist shall excavate the burrow using hand tools. Sections of flexible plastic pipe or burlap bag shall be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow. One-way doors shall be installed at the entrance to the active burrow and other potentially active burrows within 100 feet of the active burrow and monitored for at least 48 hours after installation.

Breeding Season (February 1 – August 31):

The following avoidance measures shall be implemented for all burrows identified during surveys:

1. Occupied burrows shall not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist verifies through non-invasive methods that either the birds have not begun egg-laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Burrowing owls present on-site after February 1 shall be assumed to be nesting unless evidence indicates otherwise.
2. A 100-foot buffer shall be maintained between project activities and nesting burrowing owls. No activity or entry by personnel or equipment will be allowed within the buffer area.
    a. Physical (temporary fencing) and visual (hay bales or similar) barriers shall be installed to delineate the buffer zone. Installation of the exclusionary material will be completed by construction personnel under the supervision of a qualified biologist prior to initiation of construction activities.
    b. The buffer shall be maintained until August 31 or until the young owls are foraging independently or the nest is no longer active, based upon monitoring evidence.
3. If there is danger that owls will be injured or killed as a result of construction activity, the birds may be passively relocated but only during the non-breeding season; relocation shall require coordination with and approval from the CDFW prior to relocation activities. Relocation of owls during the non-breeding season will be performed by a qualified biologist in coordination with the CDFW.
4. Any damaged or collapsed active burrowing owl burrows will be replaced with artificial burrows in adjacent habitat at a 2:1 ratio.

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APPENDIX A

Site Photos

Figure 1. Parcel 1 - fallow field in southern area (viewing north).

Figure 2. Parcel 1 - active agricultural land in northern area (viewing northeast).

Figure 3. Parcel 2 - creosote-dominated habitat.

Figure 4. East Highline Canal Lateral Eleven north/south extension, between parcels 1 (to east; photo right) and 2 & 3 (viewing north).

	
Figure 5. Parcel 2 – typical desert upland vegetation.	Figure 6. Parcel 3 - abandoned reservoir.

Figure 7. Parcel 1 - burrowing owl perched on concrete standpipe (viewing east).

APPENDIX B

Flora

Vikings Solar Energy Storage Project Site Flora
December 1-3, 2020

	Latin Name & Taxonomic Reference	Vernacular Name
FAMILY		
DICOTS - Flowering Plants		
Asteraceae	**Sunflower Family**	
	Ambrosia dumosa	white bursage
	Ambrosia [*Hymenoclea*] *salsola*	burrobush
	*Atriplex semibaccata**	Australian saltbush
	Baccharis sarothroides	desertbroom baccharis
	Baccharis sergiloides	desert baccharis
	Isocoma acradenia	alkali goldenbush
	*Lactuca serriola**	prickly lettuce
	Pluchea odorata	saltmarsh fleabane
	Pluchea sericea	arow weed
	Sonchus oleraceus	common sow thistle
Chenopodiaceae	**Goosefoot Family**	
	Atriplex canescens	four-wing saltbush
	Atriplex lentiformis	big saltbush
	*Salsola tragus**	Russian thistle, tumbleweed
	Suaeda nigra	bush seepweed
Euphorbiaceae	**Spurge Family**	
	Euphorbia polycarpa	smallseed sandmat
Plantaginacea	**Plantain Family**	
Plantago ovata	desert plantain	
Salicaceae	**Willow Family**	
	Salix exigua	Narrow-leaf willow
Solanaceae	**Nightshade Family**	
	Datura wrightii	Jimson weed
Tamaricaceae	**Tamarix Family**	
	*Tamarix aphylla**	athel tamarisk
	*Tamarix ramosissima**	saltcedar
Zygophyllaceae	**Caltrop Family**	
	Larrea tridentata	creosote bush
MONOCOTS - Grasses and Allies		
Arecaceae	**Palm Family**	
	*Phoenix sp.**	non-native palm
	Washingtonia filifera	California fan palm
Cyperaceae	**Sedge Family**	
	Cyperus odoratus	fragrant flatsedge
Poaceae	**Grass Family**	
	*Avena fatua**	common wild oats
	*Arundo donax**	giant reed
	*Bromus tectorum**	cheatgrass
	Hilaria rigida	big galleta
	Phragmites australis	common reed
	*Schismus barbatus**	Mediterranean grass
Typhaceae	**Cattail Family**	
	Typha latifolia	broadleaf cattail

* Non-Native Species

APPENDIX C

Fauna

Vertebrate Species Observed or Detected on the Vikings Solar Energy Storage Project Site
December 1-3, 2020

SCIENTIFIC NAME	COMMON NAME	NOTES
Reptiles		
Uta stansburiana	side-blotched lizard	
Birds		
Athene cunicularia	burrowing owl	SSC – burrowing sites & some overwintering sites
Buteo jamaicensis	red-tailed hawk	Fly-over
Callipepla gambelii	Gambel's quail	
Charadrius vociferus	killdeer	
Circus hudsonius	Northern harrier	Fly-over
Corvus corax	common raven	Fly-over
Falco sparverius	American kestrel	
Fulica americana	American coot	
Megaceryle alcyon	belted kingfisher	
Zenaida macroura	mourning dove	
Mammals		
Canis latrans	coyote	Scat
Canis lupus familiaris	domestic dog	Tracks; scat (non-native)

SSC: Species of Special Concern; refer to Appendix D, Special Status Species

APPENDIX D

Special-Status Flora & Fauna

Table D-1. Plant Species with Local* Records in the California Natural Diversity Database or California Native Plant Society Rare Plant Inventory and Preliminary Potential for Occurrence

Common Name ***Scientific Name***	**Status[1]**	**Habitat Description**	**Elevation Range; Life Form; Flowering Period**	**Most Recent Record Date**	**Occurrence Potential**
chaparral sand-verbena *Abronia villosa* var. *aurita*	CRPR 1B.1	Sandy areas in chaparral, coastal scrub, desert dunes; full sun. Requires barren ground; does not compete well with weedy species.	60–1570 m AH Jan–Sep	1912	**Unlikely.** Record is historic (>75 years).
Peirson's milk-vetch *Astragalus magdalenae var. peirsonii*	FT; SE; CRPR 1B.2	Slopes & hollows in mobile dunes with desert psammophytic scrub, usually alee of prevailing winds.	60-225 m PH Mar–May	2018	**Low.** Suitable dune habitat is not present.
gravel milk-vetch *Astragalus sabulonum*	CRPR 2B.2	Sandy/gravelly flats, washes & roadsides	60-885 m Jan–Aug AH	1902	**Unlikely.** Record is historic (>75 years).
Wiggin's croton *Croton wigginsii*	SR; CRPR 2B.2	Sand dunes & sandy arroyos with desert psammophytic scrub in Sonoran Desert Scrub.	0-155 m May–Jul S	2019	**Low.** Suitable dune habitat is not present.
Abrams' spurge *Euphorbia abramsiana*	CRPR 2B.2	Sandy sites in Mojavean desert Scrub; Sonoran Desert Scrub habitats.	45-1445 m AH Mar–Sep	1912	**Unlikely.** Record is historic (>75 years).
Algodones Dunes sunflower *Helianthus niveus ssp. tephrodes*	SE; CRPR 1B.2	Partially stabilized sand dunes with desert psammophytic scrub.	90-300 m PH Mar–Sept	2018	**Unlikely.** Suitable dune habitat is not present.
Darlington's blazing star *Mentzelia puberula*	CRPR 2B.2	Sandy crevices in cliffs or on rocky slopes in Mojave Desert Scrub, Sonoran Desert Scrub habitats.	70-1280 m PH Mar-May	1960	**Low.** Suitable habitat is not present.
giant Spanish-needle *Palafoxia arida var. gigantea*	CRPR 1B.3	Active & stabilized sand dunes with desert psammophytic scrub.	20-95 m A/PH Feb-May	2013	**Unlikely.** Suitable dune habitat is not present.
sand food *Pholisma sonorae*	CRPR 1B.2	Loose, deep sand dunes, usually on more stable, windward faces.	0-125 m PH (parasite) Apr–Jun	2018	**Unlikely.** Suitable dune habitat is not present.

*Nine-quad search area included: Alamorio; Holtville NE; Glamis NW; Holtville West; Holtville East (site location); Glamis SW; Calexico; Bonds Corner; and Midway Well NW.

[1]Status:

E =: Endangered	CNPS	Rare Plant Rank	AH	Annual Herb
T =: Threatened	1A	Plants presumed extirpated in California and either rare or extinct elsewhere	AG	Annual Grass
PE =: Proposed Endangered	1B	Plants rare, threatened, or endangered in California and elsewhere	PG	Perennial Grass
PT =: Proposed Threatened	2A	Plants presumed extirpated in California, but more common elsewhere	PH	Perennial Herb
C =: Candidate	2B	Plants rare, threatened, or endangered in California but more common elsewhere	PC	Perennial Cactus
R = Rare		Threat Rank	S	Shrub
	0.1	Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)	Ss	Subshrub
	0.2	Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)	T	Tree
	0.3	Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)		

Table D-2. Wildlife Species with Local* Records in the California Natural Diversity Database and Preliminary Potential for Occurrence

Common Name Scientific Name	Status[1]	Habitat Description	Most Recent Record Date	Occurrence Potential
AMPHIBIANS & REPTILES				
Sonoran Desert toad *Incilius alvarius*	SSC	Found near washes, canals, irrigation ditches, stock ponds, river bottoms, streams, springs; also occurs away from aquatic habitats. Breeds in temporary pools and irrigation ditches.	1912	**Unlikely.** Records (2) are historic (>75 years); however, suitable habitat is present on-site in the two reservoirs, the East Highline Canal, and the East Highline Lateral Eleven.
Sonoran mud turtle *Kinosternon sonoriense*	SSC	Permanent slackwater habitats along intermittent or perennial streams with abundant submergent vegetation & benthic invertebrates.	1941	**Absent.** Record is historic (>75 years); extirpated.
flat-tailed horned lizard *Phrynosoma mcallii*	SSC	Restricted to desert washes & desert flats. Critical habitat element is fine sand into which lizards burrow to avoid temperature extremes. Requires vegetative cover and native harvester ants occur (primary prey).	2017	**Absent.** No suitable habitat is present on the subject property; and native ants were not seen.
Colorado Desert fringe-toed lizard *Uma notata*	SSC	Sand dunes, dry lake beds, sandy beaches/riverbanks, desert washes, sparse desert scrub. Requires fine, loose, windblown sand for burrowing; shrubs or annuals for prey (arthropod) production.	2018	**Unlikely.** No suitable habitat is present on the subject property; and native ants were not seen.
BIRDS				
burrowing owl *Athene cunicularia*	SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	2020	**Present**. One adult was observed during the December 2020 field survey. Suitable habitat is present and they are known to occur in the immediate vicinity.
ferruginous hawk *Buteo regalis*	WL (wintering)	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice.	CNDDB -2003; eBird 2/2014	**Unlikely.** May forage over the site but abundant prey is required for this large raptor, which does not appear to be present on-site.
mountain plover *Charadrius montanus*	SSC	Short grasslands, freshly plowed fields, newly sprouting grain fields; sometimes sod farms. Short vegetation, bare ground, & flat topography; prefers grazed areas & area with burrowing rodents.	2011	**Unlikely.** Record is from the American Canal, about 17 miles NW of project site; suitable habitat is not present.
California black rail *Laterallus jamaicensis coturniculus*	ST; FP	Freshwater marshes, wet meadows shallow margins of saltwater marshes bordering larger bays. Requires water depth of about 1 inch that does not fluctuate during the year and dense vegetation for nesting habitat.	2008	**Unlikely.** Record is from the American Canal, about 6.75 miles south of project site; suitable habitat is not present.
Yuma Ridgway's rail *Rallus obsoletus yumaensis*	FE; ST; FP	Nests in freshwater marshes along Colorado River and south and east ends of Salton Sea. Prefers cattails and tules dissected by narrow channels of flowing water. Primary food is crayfish.	2008	**Unlikely.** Record is from the American Canal, about 7 miles south of project site; suitable habitat is not present.

Common Name Scientific Name	Status[1]	Habitat Description	Most Recent Record Date	Occurrence Potential
yellow warbler *Setophaga petechia*	SSC	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	1921	**Absent.** Record is historic (>75 years); suitable habitat is not present.
MAMMALS				
western mastiff bat *Eumops perotis californicus*	SSC	Utilizes many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	1996	**Unlikely.** Suitable habitat is not present.
western yellow bat *Lasiurus xanthinus*	SSC	Valley foothill riparian, desert riparian, desert wash, & palm oasis habitats. Roosts in trees, particularly palms; forages over water and among trees.	1993	**Unlikely.** Suitable habitat is not present.
pocketed free-tailed bat *Nyctinomops femorosaccus*	SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	1995	**Unlikely.** Suitable habitat is not present.
Yuma hispid cotton rat *Sigmodon hispidus eremicus*	SSC	Along Colorado River & in grass, agricultural areas near irrigation waters. Wetlands & uplands with dense grass & herbaceous plants. Makes runways through vegetation; nests on surface and in burrows. Two adult males found in 2007 in tamarisk scrub adjacent to an irrigation canal, about 0.55 mile NW of project site in similar habitat; 2009 record about 4.7 miles NNW of site.	2009	**Unlikely (on-site). Moderate off-site.** No suitable habitat is present on the project site. Suitable habitat appears to be present in the aquatic resource areas immediately adjacent to the site.
American badger *Taxidea taxus*	SSC	Drier open stages of most shrub, forest & herbaceous habitats with friable soils. Need sufficient food, friable soils & open, uncultivated ground. Preys on burrowing rodents; digs burrows.	1922	**Absent.** Record is historic (>75 years); suitable habitat is not present.

*Nine-quad search area included: Alamorio; Holtville NE; Glamis NW; Holtville West; Holtville East (site location); Glamis SW; Calexico; Bonds Corner; and Midway Well NW.

[1]Status Key

Federal (USFWS) Status
- FE: Federally Endangered
- FT: Federally Threatened

State (CDFW) Status
- SE: State Endangered
- ST: State Threatened
- SC: State Candidate
- FP: Fully Protected
- SSC: Species of Special Concern
- WL: Watch List

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

Page 1 **of** 1 ***Resource Name or #:** 064085-S-001

P1. Other Identifier:

***P2. Location:** ■ **Not for Publication** ☐ **Unrestricted** ***a. County:** Imperial

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Holtville East, CA **Date:** 1983 **T** 15S; **R** 16E; NW ¼ **of** SW ¼ **of Sec** 36 **B.M.**

c. Address: City: Imperial County, CA Zip: 32115-G3

d. UTM: Zone: 11N; 661233mE/ 3630741mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
SWCA-64085-S-001 is a historic-era refuse scatter located on an alluvial plain east of East Highline Canal and approximately 820 feet southeast of a ranch house, which itself is located outside of the project area. The site contains two features, Features 1001 and 1002, which both represent historic refuse concentrations. The site and its refuse scatter are a product of multiple dumping episodes most likely associated with the nearby ranch house, though this structure is located outside of the project area and therefore remains unevaluated for this particular study area. Based on overlap in manufacturing dates, artifacts provide an age range of the late 1950's to late 1960's, while modern refuse across the site dates from the late 1970's to early 2000's. The site map as depicted in their attached quad map shows the site as being approximately 89 m (E/W) x 69 m (N/S). (See continuation Sheet)

***P3b. Resource Attributes:** AH4 Privies/dumps/trash scatters

***P4. Resources Present:** ☐Building ☐Structure ☐Object ■Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)
Site overview looking west (270°). Camera EC-19-04, photo no. 3764.

***P6. Date Constructed/Age and Sources:** ■Historic
☐Prehistoric ☐Both

***P7. Owner and Address:**

***P8. Recorded by:**
Omar Rice, William Kendig, Christina Peterson, and Yareli Lopez
SWCA Environmental Consultants,
625 Fair Oaks Ave, Ste. 190
Pasadena, CA 91030

***P9. Date Recorded:** 12/15/2020

***P10. Survey Type:**
Intensive pedestrian

***P11. Report Citation:**
Gittelhough, T., Glenny, W., Bever, M.
2021 Cultural Resources Technical Report in Support of a CUP and EIR for the Vikings Solar Project, Imperial County, California

***Attachments:** ☐NONE ■Location Map ■Sketch Map ■Continuation Sheet ☐Building, Structure, and Object Record ■Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

ARCHAEOLOGICAL SITE RECORD

***A1. Dimensions: a. Length:** 89 m. **(E/W) × b. Width:** 69 m. **(N/S)**
Method of Measurement: ☐ Paced ■ Taped ☐ Visual estimate ☐ Other:
Method of Determination (Check any that apply.): ■ Artifacts ■ Features ☐ Soil ☐ Vegetation ☐ Topography
☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ☐ High ■ Medium ☐ Low Explain: 26-50% visibility

Limitations (Check any that apply): ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined
☐ Disturbances ■ Vegetation ■ Other (Explain): 20-40 % Visibility; Site limits

A2. Depth: Surface ■ None ☐ Unknown Method of Determination:
***A3. Human Remains:** ☐ Present ■ Absent ☐ Possible ☐ Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
Feature 1001 (6 x 7′) is a dense refuse scatter containing 94 cans, including church-key opened cans, food cans, rotary opened food cans, tear tab food cans, and sanitary cans. Glass artifacts include 100 + glass fragments with primarily colorless glass, but including green and amber glass as well. Two glass bottle bases with makers marks were recorded; one from the Brockway Glass company manufactured between 1933 and 1996, and the other from the Madera Glass Company, manufactured between 1971 and 2000.

Feature 1002 (12 x 16′) is a historic refuse scatter comprised of 42 tobacco tins, sanitary cans, and fuel cans. Ceramics include fiesta-ware cups and plate fragments, crockery, and ironstone. Various metal objects include barbed wire, metal fragments, and wire. Glass artifacts include 120+ glass fragments, which are primarily colorless and amber glass, but also include cobalt, aqua, green, and milk glass. Six glass bottle bases were recorded, including one W.J. Latchford Glass Company makers mark dating between 1957 and 1989; one Latchford-Marble Glass Company makers mark dating between 1939 and 1957; one Ober-Nestor Glass Company makers mark dating between 1915 and 1978; one 1942 Owens-Illinois Glass Company makers mark; one 1943 Owens-Illinois Glass Company maker mark; and one Hazel-Atlas Glass Company makers mark dating between 1923 and 1982.

***A5. Cultural Constituents (**Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):

***A6. Were Specimens Collected?** ■ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)
***A7. Site Condition:** ☐ Good ☐ Fair ☐ Poor (Describe disturbances.):

***A8. Nearest Water** (Type, distance, and direction.)**:** 263′ to river (need direction; name of pond)
***A9. Elevation:**
A10. Environmental Setting**:**
The site is situated on an alluvial plain with an open aspect. Sediment is comprised of a pink (Munsell 7.5YR 7/3.) silty sandy loam with sub-rounded granitic inclusions. Visibility is fair (26-50%) with vegetation consisting primarily of creosote, salt bush, and fiddleneck.

A11. Historical Information:

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ■ 1914-1945
■ Post 1945 ☐ Undetermined

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations):
This site is an isolated historic-era refuse scatter containing two refuse concentrations which have been satisfactorily recorded as individual features during this site visit. With a lack of significant historic features, structural remains, intrasite patterning, this site is likely a surficial scatter and is not anticipated to contain any additional data potential. The proximity of this site to a transportation corridor and agricultural land use may indicate a pattern of episodic refuse disposal. However, the mixed context of debris and the overlap of the historical and a modern timeline as indicated by diagnostic items further suggest the difficulty in asserting this site's significance as a marker of historic activity.

A14. Remarks: None.

A15. References (Documents, informants, maps, and other references): None.

ARCHAEOLOGICAL SITE RECORD

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.): (See Continuation Form).

Original Media/Negatives Kept at: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030

***A17. Form Prepared by: A. Sapula** **Date:** 1/20/2021
Affiliation and Address: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

Page 1 **of** 2 **Resource Name or #:** 064085-2-001 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-04: Frames 3761-3789; EC 19-19: Frames 0001-0007
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	15	3761	064085-S-001	Historic refuse concentration: Feature 1002, PD 1002	W
12	15	3762	064085-S-001	Site overview	S
12	15	3763	064085-S-001	Site overview	E
12	15	3764	064085-S-001	Site overview	W
12	15	3765	064085-S-001	Feature 1001: green bottle base, PD 1003	Detail
12	15	3766	064085-S-001	Feature 1001: colorless bottle base, PD 1004	Detail
12	15	3767	064085-S-001	Feature 1001 overview: historic refuse concentration	W
12	15	3768	064085-S-001	Feature 1001 overview: historic refuse concentration	E
12	15	3769	064085-S-001	Feature 1001 overview: historic refuse concentration	N
12	15	3770	064085-S-001	Feature 1001: clam shell	Detail
12	15	3771	064085-S-001	Feature 1001: crockery fragments	Detail
12	15	3772	064085-S-001	Feature 1001: top of fish or meat can	Detail
12	15	3773	064085-S-001	Feature 1001: side of fish or meat can	Detail
12	15	3774	064085-S-001	Feature 1001: side of sanitary can	Detail
12	15	3775	064085-S-001	Feature 1001: top of sanitary can (knife open?)	Detail
12	15	3776	064085-S-001	Feature 1001: top of small pull tab can	Detail
12	15	3777	064085-S-001	Feature 1001: side view of small pull top can	Detail
12	15	3778	064085-S-001	Feature 1001: top of sardine can (knife open)	Detail
12	15	3779	064085-S-001	Feature 1001: side view of sardine can	Detail
12	15	3780	064085-S-001	Feature 1001: church-key opened sanitary can	Detail
12	15	3781	064085-S-001	Feature 1001: church-key opened sanitary can	Detail
12	15	3782	064085-S-001	Feature 1001: bimetal beverage can	Detail
12	15	3783	064085-S-001	Feature 1001: bimetal beverage can	Detail
12	15	3784	064085-S-001	Feature 1001: aerosol can	Detail
12	15	3785	064085-S-001	Feature 1001: aerosol can	Detail
12	15	3786	064085-S-001	Feature 1002: amber bottle base, PD 1005	Detail
12	15	3787	064085-S-001	Feature 1002: clear bottle base, PD 1006	Detail
12	15	3788	064085-S-001	Feature 1002: amber bottle base, PD 1007	Detail
12	15	3789	064085-S-001	Feature 1002: aqua bottle base	Detail
12	15	1	064085-S-001	Feature 1002: amber bottle base, PD 1008	Detail
12	15	2	064085-S-001	Feature 1002: amber bottle base, PD 1009	Detail
12	15	3	064085-S-001	Feature 1002: colorless bottle base, PD 1010	E
12	15	4	064085-S-001	Site overview	E
12	15	5	064085-S-001	Site overview	S
12	15	6	064085-S-001	Site overview	N
12	15	7	064085-S-001	Feature 1002: misc. metal object	Detail

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

 Resource Name or #: 064085-2-001 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-04: Frames 3761-3789; EC 19-19: Frames 0001-0007
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	15	8	064085-S-001	Feature 1002: milk glass fragment	Detail
12	15	9	064085-S-001	Feature 1001: painted ceramic (small bowl)	Detail
12	15	10	064085-S-001	Feature 1001: blue painted ceramic fragment	Detail
12	15	11	064085-S-001	Feature 1002: barbed wire	Detail
12	15	12	064085-S-001	Feature 1002: white ceramic mug handle	Detail
12	15	13	064085-S-001	Feature 1002: blue painted ceramic plate fragment	Detail

064085-S-001 site overview looking south. Camera EC 19-04, Photo 3762.

Feature 1001 overview: historic refuse concentration, looking west**.** Camera EC 19-04, Photo 3768.

Recorded By: A. Sapula ***Date:** 1/20/2021 ■ Continuation ☐ Update

Feature 1002 overview: historic refuse concentration, looking west**.** Camera EC 19-19, Photo 3761.

Plan view of green bottle base with makers mark (PD 1003) from within Feature 1001. Camera EC 19-04, Photo 3765.

Plan view of green bottle base with makers mark from within Feature 1001.
Camera EC 19-04, Photo 3766.

Plan view of colorless glass bottle base with makers mark from within Feature 1002.
Camera E 19-19, Photo 3.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

Page 1 **of** 1 ***Resource Name or #:** 064085-2-002

P1. Other Identifier:

***P2. Location:** ■ **Not for Publication** ☐ **Unrestricted** ***a. County:** Imperial

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Holtville East, CA **Date:** 1983 **T.**15S.; **R** 16E; SW ¼ **of** SW ¼ **of Sec** 36; **B.M.**

c. Address: City: Imperial Zip: 32115-G3

d. UTM: Zone: 11N; 661353mE/ 3630228mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
SWCA-64085-S-002 is a historic-era refuse scatter consisting mainly of cans and glass bottles, with modern refuse scattered throughout the site. The site contains two features, Features 1013 and 1014, both of which are refuse concentrations. The features were dense enough to warrant two individual representative samples (PD 1015 and PD 106) were set within each for full recordation. The site is situated on in an alluvial plain with an open aspect, is in [poor/fair/good] condition, and measures 84 m (N/S) x 47 m (E/W). (See continuation Sheet)

***P3b. Resource Attributes:** AH4 Privies/dumps/trash scatters

***P4. Resources Present:** ☐Building ☐Structure ☐Object ■Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)
Site overview looking NW (315°). Photo 0014.

***P6. Date Constructed/Age and Sources:** ■Historic
☐Prehistoric ☐Both

***P7. Owner and Address:**

***P8. Recorded by:**
Omar Rice, William Kendig, Christina Peterson, and Yareli Lopez
SWCA Environmental Consultants,
625 Fair Oaks Ave, Ste. 190
Pasadena, CA 91030

***P9. Date Recorded:** 12/15/2020

***P10. Survey Type:**
Intensive pedestrian

***P11. Report Citation:**
Gittelhough, T., Glenny, W., Bever, M.
2021 Cultural Resources Technical Report in Support of a CUP and EIR for the Vikings Solar Project, Imperial County, California

***Attachments:** ☐NONE ■Location Map ■Sketch Map ■Continuation Sheet ☐Building, Structure, and Object Record ■Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

ARCHAEOLOGICAL SITE RECORD

***A1. Dimensions: a. Length:** 84 m. **(E/W) × b. Width:** 47 m. **(N/S)**
Method of Measurement: ☐ Paced ■ Taped ☐ Visual estimate ☐ Other:
Method of Determination (Check any that apply.): ■ Artifacts ■ Features ☐ Soil ☐ Vegetation ☐ Topography
☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ☐ High ■ Medium ☐ Low Explain: 26-50% visibility

Limitations (Check any that apply): ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined
☐ Disturbances ■ Vegetation ■ Other (Explain): 20-40 % Visibility; Site limits

A2. Depth: Surface ■ None ☐ Unknown Method of Determination:
***A3. Human Remains:** ☐ Present ■ Absent ☐ Possible ☐ Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
Feature 1013 (26 x 22′) is a historic refuse concentration comprised mainly of cans and bottles. Due to the size and artifact density of the feature, a smaller area measuring 3 x 3 meters was placed within the larger feature to serve as a representative sample (PD 1015). From this sample area, a total of 125 cans were recorded, which included sardine cans, paint cans, rotary opened food cans, church-key opened beverage cans, bi-metal beverage cans, aerosol cans, and spice tins. 200+ glass artifacts were recorded in the same sample, consisting of colorless, amber, green, and milk glass fragments as a few complete bottles. Six bottle bases with makers marks were identified: three with Owens-Illinois Glass Company makers marks manufactured since 1954; one with a Latchford Glass Company makers mark manufactured between 1930 and 1989; and one with a Thatcher Manufacturing Company makers marks manufactured between 1944 and 1985.

Feature 1014 (3 x 2′) is a discrete historic refuse concentration comprised primarily of cans and bottles. Due to the size and density of the feature, an area of 1 x 1 meters was delineated to serve as a representative sample (PD 1016). From this sample area, total of 28 cans were recorded, consisting of church-key opened beverage cans, sanitary cans, an oil filter, and a spice tin. Nineteen glass artifacts were recorded within the sample, including primarily colorless glass bottle fragments, as well as milk glass bottle fragments, and a complete colorless glass bottle with a Kerr Glass Manufacturing Company makers mark dating between 1969 and 1996.

***A5. Cultural Constituents (**Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):

***A6. Were Specimens Collected?** ■ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)
***A7. Site Condition:** ☐ Good ☐ Fair ☐ Poor (Describe disturbances.):

***A8. Nearest Water** (Type, distance, and direction.)**:** 159′ to freshwater pond (need name and direction)
***A9. Elevation:**
A10. Environmental Setting**:**
The site is situated on an alluvial plain with an open aspect. Sediment is comprised of a pink (Munsell 7.5YR 7/3) silty sandy loam with sub-rounded granitic inclusions. Visibility is fair (26-50%) with vegetation consisting primarily of creosote, salt bush, and fiddleneck.

A11. Historical Information: None.

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ■ 1914-1945
■ Post 1945 ☐ Undetermined

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations):
This site is an isolated historic-era refuse scatter containing two refuse concentrations which have been satisfactorily recorded as individual features with representative samples designated within each during this site visit. With a lack of significant historic features, structural remains, intrasite patterning, this site is likely a surficial scatter and is not anticipated to contain any additional data potential. The proximity of this site to a transportation corridor and agricultural land use may indicate a pattern of episodic refuse disposal. However, the mixed context of debris and the overlap of the historical and a modern timeline as indicated by diagnostic items further suggest the difficulty in asserting this site's significance as a marker of historic activity.

A14. Remarks: None.

ARCHAEOLOGICAL SITE RECORD

A15. References (Documents, informants, maps, and other references):

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.): (See Continuation Form).

Original Media/Negatives Kept at: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030

***A17. Form Prepared by: A. Sapula** **Date:** 1/20/2021
Affiliation and Address: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

 Resource Name or #: 064085-2-002 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-19: Frames 0014-0050
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	15	0014	064085-S-002	Overview of site	NW
12	15	0015	064085-S-002	Overview of site	W
12	15	0016	064085-S-002	Overview of site	S
12	15	0017	064085-S-002	Overview of site	E
12	15	0018	064085-S-002	Overview of site	NE
12	15	0019	064085-S-002	Representative sample area (PD 1015) within Feature 1013; sanitary can	Detail
12	15	0020	064085-S-002	Representative sample area (PD 1015) within Feature 1013; pull tab can	Detail
12	15	0021	064085-S-002	Representative sample area (PD 1015) within Feature 1013, note vent hole can with church key opening	Detail
12	15	0022	064085-S-002	Representative sample area (PD 1015) within Feature 1013; vent hole can with church key opening	Detail
12	15	0023	064085-S-002	Representative sample area (PD 1015) within Feature 1013; vent hole can with church key opening	Detail
12	15	0024	064085-S-002	Representative sample area (PD 1015) within Feature 1013, note oil filter (side)	Detail
12	15	0025	064085-S-002	Representative sample area (PD 1015) within Feature 1013; filter (top)	Detail
12	15	0026	064085-S-002	Representative sample area (PD 1015) within Feature 1013; oval meat can (top)	Detail
12	15	0027	064085-S-002	Representative sample area (PD 1015) within Feature 1013; tuna can	Detail
12	15	0028	064085-S-002	Representative sample area (PD 1015) within Feature 1013; spice can	Detail
12	15	0029	064085-S-002	Representative sample area (PD 1015) within Feature 1013, note bimetal beer can with church key opening (top)	Detail
12	15	0030	064085-S-002	Representative sample area (PD 1015) within Feature 1013; bimetal beer can with church key opening (bottom)	Detail
12	15	0031	064085-S-002	Representative sample area (PD 1015) within Feature 1013; small aerosol can	Detail
12	15	0032	064085-S-002	Representative sample area (PD 1015) within Feature 1013; tall can	Detail
12	15	0033	064085-S-002	Overview of representative sample area (PD 1015) within Feature 1013	NW
12	15	0034	064085-S-002	Representative sample area (PD 1015) within Feature 1013; green bottle base	Detail
12	15	0035	064085-S-002	Representative sample area (PD 1015) within Feature 1013; complete clear bottle (side)	Detail
12	15	0036	064085-S-002	Representative sample area (PD 1015) within Feature 1013; complete clear bottle (base)	Detail
12	15	0037	064085-S-002	Representative sample area (PD 1015) within Feature 1013; complete amber bottle (base)	Detail
12	15	0038	064085-S-002	Representative sample area (PD 1015) within Feature 1013; complete amber bottle (complete, side)	Detail
12	15	0039	064085-S-002	Representative sample area (PD 1015) within Feature 1013; complete clear glass bottle (base)	Detail

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

 Resource Name or #: 064085-2-002 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-19: Frames 0014-0050
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	15	0040	064085-S-002	Representative sample area (PD 1015) within Feature 1013; complete clear bottle (side)	Detail
12	15	0041	064085-S-002	Representative sample area (PD 1015) within Feature 1013; complete colorless bottle with makers mark (side)	Detail
12	15	0042	064085-S-002	Representative sample area (PD 1015) within Feature 1013; complete colorless bottle with makers mark (base)	Detail
12	15	0043	064085-S-002	Overview of representative sample area (PD 1016) within Feature 1013	Detail
12	15	0044	064085-S-002	Representative sample area (PD 1016) within Feature 1013; beer can with church key opening (side)	Detail
12	15	0045	064085-S-002	Representative sample area (PD 1016) within Feature 1013; beer can with church key opening (top)	Detail
12	15	0046	064085-S-002	Representative sample area (PD 1016) within Feature 1013; vent hole can with small church key opening (side)	Detail
12	15	0047	064085-S-002	Representative sample area (PD 1016) within Feature 1013; vent hole can with small church key opening (top)	Detail
12	15	0048	064085-S-002	Representative sample area (PD 1016) within Feature 1013; crushed spice tin	Detail
12	15	0049	064085-S-002	Representative sample area (PD 1016) within Feature 1013; colorless glass jar (side)	Detail
12	15	0050	064085-S-002	Representative sample area (PD 1016) within Feature 1013; colorless glass jar (base)	Detail

Site 064085-S-002 overview looking south. Photo 16.

Overview of Feature 1013 and sample area marked within (PD 1015). Photo 33.

Overview of Feature 1013 and sample area marked within (PD 1016). Photo 43.

Plan view of colorless bottle base with makers mark (PD 1015) from within Feature 1013. Photo 42.

Plan view of clear bottle base (PD 1015) from within Feature 1013. Photo 36.

Plan view of vent hole can with small church key opening from within PD 1016 of Feature 1013. Photo 47.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

Page 1 **of** 1 ***Resource Name or #:** 064085-2-003

P1. Other Identifier:

***P2. Location:** ■ **Not for Publication** ☐ **Unrestricted** ***a. County:** Imperial

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Holtville East, CA **Date:** 1983 **T.**15S.; **R** 16E; SW ¼ **of** SW ¼ **of Sec** 36; **B.M.**

c. Address: City: Imperial Zip: 32115-G3

d. UTM: Zone: 11N; 661334mE/ 3630348mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries) SWCA-64085-S-003 is a historic-era refuse scatter consisting mainly of cans and glass bottles, with modern refuse scattered throughout the site. The site contains two features, Features 1024 and 1027, both of which are refuse concentrations. The features were dense enough to warrant two individual representative samples were set within each for full recordation (PD 1025 and PD 1026). The site is situated on in an alluvial plain with an open aspect, is in [poor/fair/good] condition, and measures 80 m (N/S) x 67 m (E/W). (See continuation Sheet)

***P3b. Resource Attributes:** AH4 Privies/dumps/trash scatters

***P4. Resources Present:** ☐Building ☐Structure ☐Object ■Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)
Site 064085-S-0003 overview looking E (90°). Photo 0054.

***P6. Date Constructed/Age and Sources:** ■Historic
☐Prehistoric ☐Both

***P7. Owner and Address:**

***P8. Recorded by:**
Omar Rice, William Kendig, Christina Peterson, and Yareli Lopez
SWCA Environmental Consultants,
625 Fair Oaks Ave, Ste. 190
Pasadena, CA 91030

***P9. Date Recorded:** 12/16/2020

***P10. Survey Type:**
Intensive pedestrian

***P11. Report Citation:**
Gittelhough, T., Glenny, W., Bever, M.
2021 Cultural Resources Technical Report in Support of a CUP and EIR for the Vikings Solar Project, Imperial County, California

***Attachments:** ☐NONE ■Location Map ■Sketch Map ■Continuation Sheet ☐Building, Structure, and Object Record ■Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

ARCHAEOLOGICAL SITE RECORD

***A1. Dimensions: a. Length:** 84 m. **(E/W) × b. Width:** 47 m. **(N/S)**
Method of Measurement: ☐ Paced ■ Taped ☐ Visual estimate ☐ Other:
Method of Determination (Check any that apply.): ■ Artifacts ■ Features ☐ Soil ☐ Vegetation ☐ Topography ☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ☐ High ■ Medium ☐ Low Explain: 26-50% visibility

Limitations (Check any that apply): ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined ☐ Disturbances ■ Vegetation ■ Other (Explain): 20-40 % Visibility; Site limits

A2. Depth: Surface ■ None ☐ Unknown Method of Determination:
***A3. Human Remains:** ☐ Present ■ Absent ☐ Possible ☐ Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
Feature 1043 consists of a large, domestic refuse concentration. Due to the size and artifact density of the feature, one smaller area (4 x 4') within the larger feature was selected as a representative sample (PD 1044). Materials observed within PD 1044 include 150+ rotary opened sanitary meat cans, 20+ large church key opened sanitary juice cans, 50+ rotary opened food cans, four aerosol cans, and three bi-metal pull tab beverage cans. Glass artifacts included six external thread condiment bottles, two perfume bottles with spray tops, and six food jars. Nine complete glass bottles with makers mark were identified: one colorless glass bottle with a Ball Brothers Glass Manufacturing Company makers mark manufactured between 1933 and 1936; one colorless flask bottle with a Ball Brothers Glass Manufacturing Company makers mark manufactured between 1933 and 1936; four bottles (three colorless and one green) with Owens-Illinois Glass Company makers mark manufactured beginning in 1954; one colorless bottle with a Pierce Glass Company makers mark manufactured between 1905 and 1987; one colorless glass bottle with a Glass Container Corporation makers mark manufactured between 1967 and 1987; and a cobalt blue Noxzema bottle first sold in 1914. Additional materials observed within the sample area include five fragments of cut mammal bones (likely cow), aluminum foil fragments, four aluminum food trays, a colorless decorative glass stem, a plastic hypodermic cap, miscellaneous plastic fragments, a plastic lipstick case, a plastic detergent bottle, and three aluminum pull-tab beer cans.

***A5. Cultural Constituents (**Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):

***A6. Were Specimens Collected?** ■ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)
***A7. Site Condition:** ☐ Good ☐ Fair ☐ Poor (Describe disturbances.):

***A8. Nearest Water** (Type, distance, and direction.)**:** 208' to freshwater pond (need name and direction).
***A9. Elevation:**
A10. Environmental Setting**:**
The site is situated on an alluvial plain with an open aspect. Sediment is comprised of a pink (Munsell 7.5YR 7/3) silty sandy loam with sub-rounded granitic inclusions. Visibility is fair (26-50%) with vegetation consisting primarily of creosote, salt bush, and fiddleneck.

A11. Historical Information: None.

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ■ 1914-1945 ■ Post 1945 ☐ Undetermined

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations):
This site is an isolated historic-era refuse scatter containing three refuse concentrations which have been satisfactorily recorded as representative samples within individual features during this site visit. With a lack of significant historic features, structural remains, intrasite patterning, this site is likely a surficial scatter and is not anticipated to contain any additional data potential. The proximity of this site to a transportation corridor and agricultural land use may indicate a pattern of episodic refuse disposal. However, the mixed context of debris and the overlap of the historical and a modern timeline as indicated by diagnostic items further suggest the difficulty in asserting this site's significance as a marker of historic activity.

A14. Remarks: None.

A15. References (Documents, informants, maps, and other references):

ARCHAEOLOGICAL SITE RECORD

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.): (See Continuation Form).

Original Media/Negatives Kept at: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030

***A17. Form Prepared by: A. Sapula** **Date:** 1/20/2021
Affiliation and Address: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

 Resource Name or #: 064085-2-003 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-19: 12/15/20, Frames 51-54; 12/16/20, Frames 1-108
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	15	51	064085-S-003	Site 064085-S-003 overview	N
12	15	52	064085-S-003	Site 064085-S-003 overview	S
12	15	53	064085-S-003	Site 064085-S-003 overview	W
12	15	54	064085-S-003	Site 064085-S-003 overview	E
12	16	1	064085-S-003	Feature 1024 within site 064085-S-003	S
12	16	2	064085-S-003	Feature 1024 within site 064085-S-003	S
12	16	3	064085-S-003	Feature 1024 within site 064085-S-003	SE
12	16	4	064085-S-003	Feature 1024 within site 064085-S-003	E
12	16	5	064085-S-003	Feature 1024 within site 064085-S-003	E
12	16	6	064085-S-003	Site 064085-S-003 overview	NE
12	16	7	064085-S-003	Site 064085-S-003 overview	NE
12	16	8	064085-S-003	Site 064085-S-003 overview	N
12	16	9	064085-S-003	Site 064085-S-003 overview	S
12	16	10	064085-S-003	Site 064085-S-003 overview	S
12	16	11	064085-S-003	Feature 1024, Sample area PD 1025 overview, can scatter	SW
12	16	12	064085-S-003	Feature 1024, Sample area PD 1025 overview, can scatter	W
12	16	13	064085-S-003	Feature 1024, Sample area PD 1025 overview, knife-opened sanitary can (complete)	Detail
12	16	14	064085-S-003	Feature 1024, Sample area PD 1025 overview, knife-opened sanitary can (seam)	Detail
12	16	15	064085-S-003	Feature 1024, Sample area PD 1025 overview, knife-opened sanitary can (top)	Detail
12	16	16	064085-S-003	Feature 1024, Sample area PD 1025 overview, sanitary can rotary-opened	Detail
12	16	17	064085-S-003	Feature 1024, Sample area PD 1025 overview, sanitary can rotary-opened (seam)	Detail
12	16	18	064085-S-003	Feature 1024, Sample area PD 1025 overview, sanitary can rotary-opened (top)	Detail
12	16	19	064085-S-003	Feature 1024, Sample area PD 1025 overview, bi-metal beverage can overview	Detail
12	16	20	064085-S-003	Feature 1024, Sample area PD 1025 overview, bi-metal beverage can label “OLYMPIA BEER”	Detail
12	16	21	064085-S-003	Feature 1024, Sample area PD 1025 overview, bi-metal beverage can label “OLYMPIA BEER”	Detail
12	16	22	064085-S-003	Feature 1024, Sample area PD 1025 overview, bi-metal beverage can (top) “PULL RING PLEASE DON’T LITTER”	Detail
12	16	23	064085-S-003	Feature 1024, Sample area PD 1025 overview, aerosol paint can overview	Detail
12	16	24	064085-S-003	Feature 1024, Sample area PD 1025 overview, aerosol paint can overview	Detail
12	16	25	064085-S-003	Feature 1024, Sample area PD 1025 overview, aerosol paint can (top)	Detail

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

 Resource Name or #: 064085-2-003 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-19: 12/15/20, Frames 51-54; 12/16/20, Frames 1-108
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	16	26	064085-S-003	Feature 1024, Sample area PD 1025 overview, colorless glass bottle overview	Detail
12	16	27	064085-S-003	Feature 1024, Sample area PD 1025 overview, colorless glass bottle overview embossed "ONE PINT"	Detail
12	16	28	064085-S-003	Feature 1024, Sample area PD 1025 overview, "BALL" colorless glass jar base	Detail
12	16	29	064085-S-003	Feature 1024, Sample area PD 1025 overview, "BALL" colorless glass jar base	Detail
12	16	30	064085-S-003	Feature 1024, Sample area PD 1026 overview	S
12	16	31	064085-S-003	Feature 1024, Sample area PD 1026 overview	SW
12	16	32	064085-S-003	Feature 1024, Sample area PD 1026, tall bi-metal can, regular size (top) "PAT PEND ALUMINUM"	Detail
12	16	33	064085-S-003	Feature 1024, Sample area PD 1026, tall bi-metal can	Detail
12	16	34	064085-S-003	Feature 1024, Sample area PD 1026, tall bi-metal can (top)	Detail
12	16	35	064085-S-003	Feature 1024, Sample area PD 1026, church key opened sanitary can	Detail
12	16	36	064085-S-003	Feature 1024, Sample area PD 1026, church key opened sanitary can (top)	Detail
12	16	37	064085-S-003	Feature 1024, Sample area PD 1026, church key opened sanitary can (top)	Detail
12	16	38	064085-S-003	Feature 1024, Sample area PD 1026, sanitary can, small solder dot	Detail
12	16	39	064085-S-003	Feature 1024, Sample area PD 1026, sanitary can, small solder dot (base)	Detail
12	16	40	064085-S-003	Feature 1024, Sample area PD 1026, Small church key opened juice can	Detail
12	16	41	064085-S-003	Feature 1024, Sample area PD 1026, Small church key opened juice can (top)	Detail
12	16	42	064085-S-003	Feature 1024, Sample area PD 1026, rotary opened fruit can	Detail
12	16	43	064085-S-003	Feature 1024, Sample area PD 1026, rotary opened fruit can (top)	Detail
12	16	44	064085-S-003	Feature 1024, PD 1030 Amber medicine bottle	Detail
12	16	45	064085-S-003	Feature 1024, PD 1030 Amber medicine bottle (base)	Detail
12	16	46	064085-S-003	Feature 1024, PD 1030 Amber medicine bottle finish	Detail
12	16	47	064085-S-003	Feature 1024, PD 1031 Green glass bottle base	Detail
12	16	48	064085-S-003	Feature 1024, PD 1031 Green glass bottle	Detail
12	16	49	064085-S-003	Feature 1024, PD 1031 Green glass bottle	Detail
12	16	50	064085-S-003	Feature 1024, PD 1032 Amber glass beverage bottle	Detail
12	16	51	064085-S-003	Feature 1024, PD 1032 Amber glass beverage bottle	Detail
12	16	52	064085-S-003	Feature 1024, PD 1032 Amber glass beverage bottle finish	Detail
12	16	53	064085-S-003	Feature 1024, PD 1032 Amber glass beverage bottle (base)	Detail
12	16	54	064085-S-003	Feature 1024, PD 1032 Amber glass beverage bottle (base)	S
12	16	55	064085-S-003	PD 1027 overview, trash dump	S

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

 Resource Name or #: 064085-2-003 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-19: 12/15/20, Frames 51-54; 12/16/20, Frames 1-108
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	16	56	064085-S-003	PD 1027 overview, trash dump	SW
12	16	57	064085-S-003	PD 1027, sample area 1026 overview	N
12	16	58	064085-S-003	PD 1027, sample area 1026 overview	NE
12	16	59	064085-S-003	Feature 1024, PD 1033 Handy oval liquor colorless glass bottle	Detail
12	16	60	064085-S-003	Feature 1024, PD 1033 Handy oval liquor colorless glass bottle (base)	Detail
12	16	61	064085-S-003	Feature 1024, PD 1033 Handy oval liquor colorless glass bottle (base)	Detail
12	16	62	064085-S-003	Sample area 1025, PD 1033 Handy oval liquor colorless glass bottle (base)	Detail
12	16	63	064085-S-003	Sample area 1025, PD-1035 Pipe valve	Detail
12	16	64	064085-S-003	Sample area 1025, PD-1035 Pipe valve lettering	Detail
12	16	65	064085-S-003	Sample area 1025, PD-1035 Pipe valve lettering	Detail
12	16	66	064085-S-003	Sample area 1025, PD-1035 Pipe valve (rear)	Detail
12	16	67	064085-S-003	Sample area 1025, PD-1035 Pipe valve lettering (rear)	Detail
12	16	68	064085-S-003	Sample area 1025, PD-1035 Pipe valve lettering (rear)	Detail
12	16	69	064085-S-003	Sample area 1025, PD-1035 Pipe valve lettering (rear)	Detail
12	16	70	064085-S-003	Site 064085-S-003, Feature 1027 overview	N
12	16	71	064085-S-003	Site 064085-S-003, Feature 1027 overview	E
12	16	72	064085-S-003	Site 064085-S-003, Feature 1027 overview	NE
12	16	73	064085-S-003	Site 064085-S-003, Feature 1027 overview	E
12	16	74	064085-S-003	Site 064085-S-003, Feature 1027 overview	E
12	16	75	064085-S-003	Feature 1027, Sample area 1028, oil can	Detail
12	16	76	064085-S-003	Feature 1027, Sample area 1028, oil can (seam)	Detail
12	16	77	064085-S-003	Feature 1027, Sample area 1028, oil can (seam)	Detail
12	16	78	064085-S-003	Feature 1027, Sample area 1028, oil can (top)	Detail
12	16	79	064085-S-003	Feature 1027, Sample area 1028, oil can (top)	Detail
12	16	80	064085-S-003	Feature 1027, Sample area 1028, oil can (finish)	Detail
12	16	81	064085-S-003	Feature 1027, Sample area 1028, oil can (base)	Detail
12	16	82	064085-S-003	Feature 1027, Sample area 1028, large oil can	Detail
12	16	83	064085-S-003	Feature 1027, Sample area 1028, large oil can	Detail
12	16	84	064085-S-003	Feature 1027, Sample area 1028, large oil can (top)	Detail
12	16	85	064085-S-003	Feature 1027, Sample area 1028, large oil can (top)	Detail
12	16	86	064085-S-003	Feature 1027, Sample area 1028, large oil can (top)	Detail
12	16	87	064085-S-003	Feature 1027, Sample area 1028, large oil can (top)	Detail
12	16	88	064085-S-003	Feature 1027, Sample area 1028, sanitary meat can	Detail
12	16	89	064085-S-003	Feature 1027, Sample area 1028, sanitary meat can side seam	Detail
12	16	90	064085-S-003	Feature 1027, Sample area 1028, sanitary meat can side seam	Detail

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

 Resource Name or #: 064085-2-003 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-19: 12/15/20, Frames 51-54; 12/16/20, Frames 1-108
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

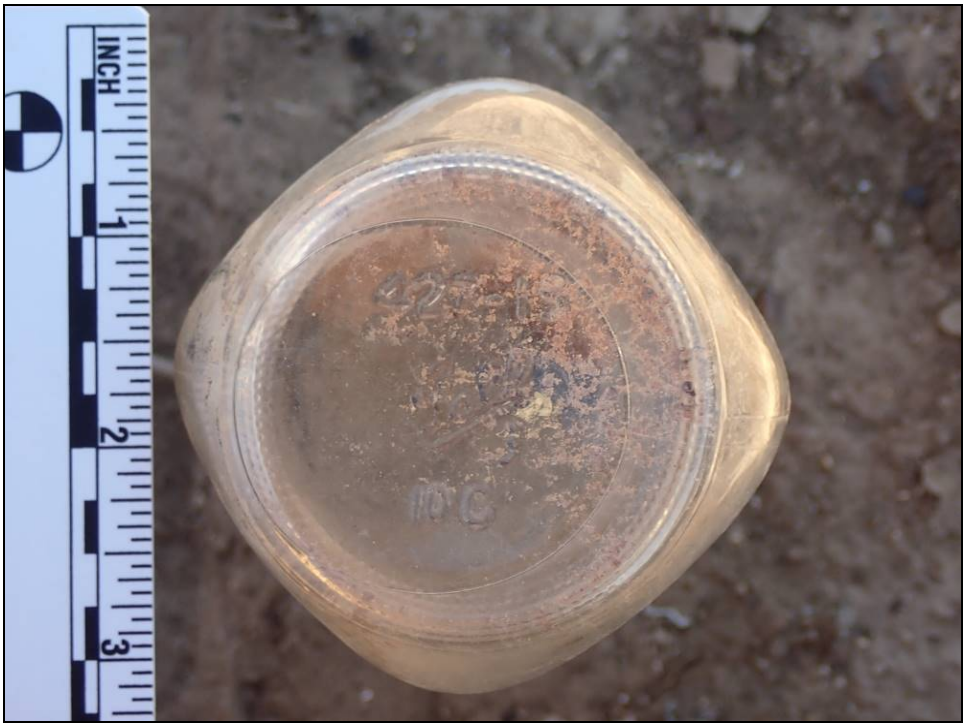
Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	16	91	064085-S-003	Feature 1027, Sample area 1028, sanitary meat can, rotary opened (top)	Detail
12	16	92	064085-S-003	Feature 1027, PD 1036 Handy Oval liquor bottle	Detail
12	16	93	064085-S-003	Feature 1027, PD 1036 Handy Oval liquor bottle embossing	Detail
12	16	94	064085-S-003	Feature 1027, PD 1036 Handy Oval liquor bottle	Detail
12	16	95	064085-S-003	Feature 1027, PD 1036 Handy Oval liquor bottle finish	Detail
12	16	96	064085-S-003	Feature 1027, PD 1036 Handy Oval liquor bottle (base)	Detail
12	16	97	064085-S-003	Feature 1027, PD 1036 Handy Oval liquor bottle (base)	Detail
12	16	98	064085-S-003	Feature 1027, PD 1037 clear glass jar	Detail
12	16	99	064085-S-003	Feature 1027, PD 1037 clear glass jar (base)	Detail
12	16	100	064085-S-003	Feature 1027, PD 1037 clear glass jar (base)	Detail
12	16	101	064085-S-003	Feature 1027, PD 1038 amber glass bottle	Detail
12	16	102	064085-S-003	Feature 1027, PD 1038 amber glass bottle (base)	Detail
12	16	103	064085-S-003	Feature 1027, PD 1039 light amber glass bottle	Detail
12	16	104	064085-S-003	Feature 1027, PD 1039 light amber glass bottle (base)	Detail
12	16	105	064085-S-003	Feature 1027, PD 1039 light amber glass bottle (base)	Detail
12	16	106	064085-S-003	Feature 1024, PD 1034 painted ceramic plate	Detail
12	16	107	064085-S-003	Feature 1024, PD 1034 painted ceramic plate	Detail
12	16	108	064085-S-003	Feature 1024, PD 1034 painted ceramic plate with makers mark (base)	Detail
12	16	109	064085-S-003	Feature 1024, PD 1034 painted ceramic plate with makers mark (base)	Detail

Recorded By: A. Sapula ***Date:** 1/20/2021 ■ Continuation ☐ Update

Site 064085-S-003 overview looking east. 12/15/20. Photo 54.

Overview of Feature 1023 looking south. 12/16/2020, Photo 1.

Overview of Feature 1024 and sample area marked, facing southwest (PD 1025). 12/16/2020, Photo 11.



Detail view of "BALL" colorless jar base within sample area (PD 1025) of Feature 1024. 12/16/2020, Photo 28.

Detail view of bi-metal beverage can label "OLYMPIA BEER" within sample area (PD 1025) of Feature 1024. Camera EC 19-19, 12/16/2020, Photo 20.

Overview of Feature 1024 and sample area marked (PD 1026), facing south. 12/16/2020, Photo 31.

Detail view of sanitary can with small solder dot (base) from within PD 1026 of Feature 1024. Photo 39.

Detail view of amber medicine bottle base from within Feature 1024, PD 1030. 12/16/2020. Photo 45.

Detail view of amber glass beverage bottle base from within Feature 1024, PD 1030. 12/16/2020. Photo 53.

Overview of trash dump (PD 1027). 12/16/2020. Photo 55.

Recorded By: A. Sapula ***Date:** 1/20/2021 ■ Continuation ☐ Update

Overview of trash dump (PD 1027). 12/16/2020. Photo 55.

Detail view of pipe valve from Sample Area 1025, PD-1035. 12/16/2020. Photo 63.

Overview of Feature 1027. 12/16/2020. Photo 70.

Recorded By: A. Sapula ***Date:** 1/20/2021 ■ Continuation ☐ Update

Detail view from Sample Area PD 1034 within Feature 1024. 12/16/2020. Photo 108.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

 ***Resource Name or #:** 064085-2-004

P1. Other Identifier:

***P2. Location:** ■ **Not for Publication** ☐ **Unrestricted** ***a. County:** Imperial

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Holtville East, CA **Date:** 1983 **T.**15S.; **R** 16E; NW ¼ **of** NW ¼ **of Sec** 36; **B.M.**

c. Address: City: Imperial Zip: 32115-G3

d. UTM: Zone: 11N; 661111mE/ 3631405mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
SWCA-64085-S-004 is a historic refuse scatter consisting mainly of cans and glass bottles, with modern refuse noted throughout the site. The site contains one refuse concentration which was recorded as Feature 1043. The site is situated on an alluvial plain with an open aspect, is in [poor/fair/good] condition, and measures 125 m (N/S) x 36 m (E/W).

***P3b. Resource Attributes:** AH4 Privies/dumps/trash scatters

***P4. Resources Present:** ☐Building ☐Structure ☐Object ■Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)
Site 064085-S-0004 overview looking N (0°). Photo 001.

***P6. Date Constructed/Age and Sources:** ■Historic
☐Prehistoric ☐Both

***P7. Owner and Address:**

***P8. Recorded by:**
Omar Rice, William Kendig, Christina Peterson, and Yareli Lopez
SWCA Environmental Consultants,
625 Fair Oaks Ave, Ste. 190
Pasadena, CA 91030

***P9. Date Recorded:** 12/17/2020

***P10. Survey Type:**
Intensive pedestrian

***P11. Report Citation:**
Gittelhough, T., Glenny, W., Bever, M.
2021 Cultural Resources Technical Report in Support of a CUP and EIR for the Vikings Solar Project, Imperial County, California

***Attachments:** ☐NONE ■Location Map ■Sketch Map ■Continuation Sheet ☐Building, Structure, and Object Record ■Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

ARCHAEOLOGICAL SITE RECORD

***A1. Dimensions: a. Length:** 84 m. **(E/W) × b. Width:** 47 m. **(N/S)**
Method of Measurement: ☐ Paced ■ Taped ☐ Visual estimate ☐ Other:
Method of Determination (Check any that apply.): ■ Artifacts ■ Features ☐ Soil ☐ Vegetation ☐ Topography
☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ☐ High ■ Medium ☐ Low Explain: 26-50% visibility

Limitations (Check any that apply): ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined
☐ Disturbances ■ Vegetation ■ Other (Explain): 20-40 % Visibility; Site limits

A2. Depth: Surface ■ None ☐ Unknown Method of Determination:
***A3. Human Remains:** ☐ Present ■ Absent ☐ Possible ☐ Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
Feature 1024 (33 X 44′) is a large historic refuse concentration, comprised primarily of cans and bottles. Due to the size and artifact density of the feature, two 2 x 2′ sample areas were placed within the larger feature (PD 1025 and PD 1026. Sample PD 1025 contained 97 cans, consisting of beverage cans, fruit cans, and paint cans. Diagnostic artifacts included a single orange juice bottle with a Ball Brothers Glass Manufacturing Company makers mark manufactured between 1933 and 1936. Miscellaneous items included plastic buttons, rubber hose fragments, construction debris, and miscellaneous metal fragments.
Sample PD 1026 contained 68 cans, consisting of pull-tab bi-metal beverage cans, milk cans, and rotary opened fruit cans. Also recorded were glass cups, bottles, and glass bottle fragments. Diagnostic glass artifacts include one E&J Gallo makers mark manufactured from 1958 to the present; one amber glass bottle with an Owens-Illinois Glass Company makers mark manufactured beginning in 1954; and a clear flask bottle with a Fairmont Glass Works makers mark manufactured between 1933 and 1968.
Feature 1027 consists of a discrete historic-era refuse concentration and is comprised primarily of cans and bottles. Due to the size And density of the feature, an area was delineated as a representative sample (PD 1028). Over 75 cans were recorded within the sample, primarily bi-metal pull tab beverage cans and including fruit cans, milk cans, and meat tins. Nine complete bottles were also recorded, all of colorless or amber glass, with three having identifiable makers marks: one amber glass bottle with an Owens-Illinois Glass Company makers mark manufactured beginning in 1954; one colorless glass bottle base with a Latchford Glass Company makers mark manufactured between 1957 and 1989; and one amber glass bottle base with a Northwestern Glass Company makers mark manufactured between 1931 and 1987. Other artifacts recorded include construction debris, oil filters, and miscellaneous metal fragments.

***A5. Cultural Constituents (**Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):

***A6. Were Specimens Collected?** ■ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)
***A7. Site Condition:** ☐ Good ☐ Fair ☐ Poor (Describe disturbances.):

***A8. Nearest Water** (Type, distance, and direction.)**:** 178′ to river (need name and direction).
***A9. Elevation:**
A10. Environmental Setting**:**
The site is situated on an alluvial plain with an open aspect. Sediment is comprised of a pink (Munsell 7.5YR 7/3) silty sandy loam with sub-rounded granitic inclusions. Visibility is fair (26-50%) with vegetation consisting primarily of creosote, salt bush, and fiddleneck.

A11. Historical Information: None.

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ■ 1914-1945
■ Post 1945 ☐ Undetermined

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations):
This isolated historic-era domestic refuse scatter containing one refuse concentration has been satisfactorily recorded during this site visit. With a lack of significant historic features or intrasite patterning, this site represents a surficial scatter and is not anticipated to contain any additional data potential. The proximity of this site to a transportation corridor, agricultural land, and a ranch house (outside of the project area boundary) may indicate a pattern of episodic refuse disposal. The site likely dates from the early 1930's to the late 1960's, though there is evidence of modern agricultural and household refuse that dates from the late 1970's to the early 2000's, both within and outside the site boundary. The presence of modern materials intermixed within the site and within the feature indicate continued use as a dump to the present day. The mixed context of debris and the overlap of

the historical and modern timelines as indicated by diagnostic items further suggest the difficulty in asserting this site's significance as a marker of historic activity.

A14. Remarks: None.

A15. References (Documents, informants, maps, and other references):

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.): (See Continuation Form).

Original Media/Negatives Kept at: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030

***A17. Form Prepared by: A. Sapula** **Date:** 1/20/2021
Affiliation and Address: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

 Resource Name or #: 064085-2-004 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-19: Frames
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	17	1	064085-S-004	Site 064085-S-004 overview	N/NW
12	17	2	064085-S-004	Site 064085-S-004 overview	N/NW
12	17	3	064085-S-004	Site 064085-S-004 overview	N/NW
12	17	4	064085-S-004	Site 064085-S-004 overview	W
12	17	5	064085-S-004	Site 064085-S-004 overview	W
12	17	6	064085-S-004	Site 064085-S-004 overview	W
12	17	7	064085-S-004	Site 064085-S-004 overview	NW
12	17	8	064085-S-004	Site 064085-S-004 overview	N
12	17	9	064085-S-004	Feature 1043 overview	S
12	17	10	064085-S-004	Feature 1043 overview	E
12	17	11	064085-S-004	Feature 1043 overview	SE
12	17	12	064085-S-004	Sample Area 1044 overview	NE
12	17	13	064085-S-004	Sample Area 1044 overview	NE
12	17	14	064085-S-004	Sample Area 1044 overview	NE
12	17	15	064085-S-004	Sample Area 1044; rotary-opened meat can	Detail
12	17	16	064085-S-004	Sample Area 1044; rotary-opened meat can	Detail
12	17	17	064085-S-004	Sample Area 1044; rotary-opened meat can	Detail
12	17	18	064085-S-004	Sample Area 1044; church key opened large juice can	Detail
12	17	19	064085-S-004	Sample Area 1044; church key opened large juice can	Detail
12	17	20	064085-S-004	Sample Area 1044; church key opened large juice can	Detail
12	17	21	064085-S-004	Sample Area 1044; fruit can, rotary opened	Detail
12	17	22	064085-S-004	Sample Area 1044; fruit can, rotary opened	Detail
12	17	23	064085-S-004	Sample Area 1044; fruit can, rotary opened	Detail
12	17	24	064085-S-004	Sample Area 1044; aerosol paint can	Detail
12	17	25	064085-S-004	Sample Area 1044; aerosol paint can	Detail
12	17	26	064085-S-004	Sample Area 1044; aerosol paint can	Detail
12	17	27	064085-S-004	Sample Area 1044; pull tab juice can	Detail
12	17	28	064085-S-004	Sample Area 1044; pull tab juice can	Detail
12	17	29	064085-S-004	Sample Area 1044; pull tab can	Detail
12	17	30	064085-S-004	Sample Area 1044; pull tab can	Detail
12	17	31	064085-S-004	Sample Area 1044; pull tab can	Detail
12	17	32	064085-S-004	Sample Area 1044; pull tab root beer can	Detail
12	17	33	064085-S-004	Sample Area 1044; pull tab root beer can	Detail
12	17	34	064085-S-004	Sample Area 1044; pull tab root beer can	Detail
12	17	35	064085-S-004	Feature 1043, Sample Area 1045; Noxzema Ointment cobalt jar	Detail
12	17	36	064085-S-004	Feature 1043, Sample Area 1045; Noxzema Ointment cobalt jar	Detail

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

Page 1 **of** 4 **Resource Name or #:** 064085-2-004 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-19: Frames
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	17	37	064085-S-004	Feature 1043, Sample Area 1045; Noxzema Ointment cobalt jar	Detail
12	17	38	064085-S-004	Feature 1043, Sample Area 1045; Noxzema Ointment cobalt jar	Detail
12	17	39	064085-S-004	Feature 1043, Sample Area 1044; PD 1046: Colorless "Ball" Pickle/fruit jar	Detail
12	17	40	064085-S-004	Feature 1043, Sample Area 1044; PD 1046: Colorless "Ball" Pickle/fruit jar	Detail
12	17	41	064085-S-004	Feature 1043, Sample Area 1044; PD 1046: Colorless "Ball" Pickle/fruit jar	Detail
12	17	42	064085-S-004	Feature 1043, Sample Area 1044; PD 1047: Green glass juice jar	Detail
12	17	43	064085-S-004	Feature 1043, Sample Area 1044; PD 1047: Green glass juice jar	Detail
12	17	44	064085-S-004	Feature 1043, Sample Area 1044; PD 1047: Green glass juice jar	Detail
12	17	45	064085-S-004	Feature 1043, Sample Area 1044; PD 1047: Green glass juice jar	Detail
12	17	46	064085-S-004	Feature 1043, Sample Area 1044; PD 1047: Green glass juice jar	Detail
12	17	47	064085-S-004	Feature 1043, Sample Area 1044; PD 1047: Green glass juice jar	Detail
12	17	48	064085-S-004	Feature 1043, Sample Area 1044; PD 1048: Colorless salad dressing glass bottle	Detail
12	17	49	064085-S-004	Feature 1043, Sample Area 1044; PD 1048: Colorless salad dressing glass bottle	Detail
12	17	50	064085-S-004	Feature 1043, Sample Area 1044; PD 1048: Colorless salad dressing glass bottle	Detail
12	17	51	064085-S-004	Feature 1043, Sample Area 1044; PD 1048: Colorless salad dressing glass bottle	Detail
12	17	52	064085-S-004	Feature 1043, Sample Area 1044; PD 1048: Colorless salad dressing glass bottle	Detail
12	17	53	064085-S-004	Feature 1043, Sample Area 1044; PD 1048: Colorless salad dressing glass bottle	Detail
12	17	54	064085-S-004	Feature 1043, Sample Area 1044; PD 1049: Colorless salad dressing glass bottle	Detail
12	17	55	064085-S-004	Feature 1043, Sample Area 1044; PD 1049: Colorless salad dressing glass bottle	Detail
12	17	56	064085-S-004	Feature 1043, Sample Area 1044; PD 1049: Colorless salad dressing glass bottle	Detail
12	17	57	064085-S-004	Feature 1043, Sample Area 1044; PD 1050: Colorless glass Bleu Cheese salad dressing jar	Detail
12	17	58	064085-S-004	Feature 1043, Sample Area 1044; PD 1050: Colorless glass Bleu Cheese salad dressing jar	Detail
12	17	59	064085-S-004	Feature 1043, Sample Area 1044; PD 1050: Colorless glass Bleu Cheese salad dressing jar	Detail
12	17	60	064085-S-004	Feature 1043, Sample Area 1044; PD 1050: Colorless glass Bleu Cheese salad dressing jar	Detail
12	17	61	064085-S-004	Feature 1043, Sample Area 1044; PD 1050: Colorless glass Bleu Cheese salad dressing jar	Detail
12	17	62	064085-S-004	Feature 1043, Sample Area 1044; PD 1050: Colorless glass Bleu Cheese salad dressing jar	Detail

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Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	17	63	064085-S-004	Feature 1043, Sample Area 1044; PD 1050: Colorless glass Bleu Cheese salad dressing jar	Detail
12	17	64	064085-S-004	Feature 1043, Sample Area 1044; PD 1050: Colorless glass Bleu Cheese salad dressing jar	Detail
12	17	65	064085-S-004	Feature 1043, Sample Area 1044; PD 1051: Colorless glass coffee jar	Detail
12	17	66	064085-S-004	Feature 1043, Sample Area 1044; PD 1051: Colorless glass coffee jar	Detail
12	17	67	064085-S-004	Feature 1043, Sample Area 1044; PD 1051: Colorless glass coffee jar	Detail
12	17	68	064085-S-004	Feature 1043, Sample Area 1044; PD 1052: Colorless glass liquor bottle	Detail
12	17	69	064085-S-004	Feature 1043, Sample Area 1044; PD 1052: Colorless glass liquor bottle	Detail
12	17	70	064085-S-004	Feature 1043, Sample Area 1044; PD 1052: Colorless glass liquor bottle	Detail
12	17	71	064085-S-004	Feature 1043, Sample Area 1044; PD 1052: Colorless glass liquor bottle	Detail
12	17	72	064085-S-004	Feature 1043, Sample Area 1044; Pull tab black cherry soda can	Detail
12	17	73	064085-S-004	Feature 1043, Sample Area 1044; Pull tab black cherry soda can	Detail
12	17	74	064085-S-004	Feature 1043, Sample Area 1044; PD 1053: Colorless glass food jar	Detail
12	17	75	064085-S-004	Feature 1043, Sample Area 1044; PD 1053: Colorless glass food jar	Detail
12	17	76	064085-S-004	Feature 1043, Sample Area 1044; PD 1053: Colorless glass food jar	Detail
12	17	77	064085-S-004	Feature 1043, Sample Area 1044; PD 1053: Colorless glass food jar	Detail
12	17	78	064085-S-004	Car parts within Feature 1043	Detail
12	17	79	064085-S-004	Car parts within Feature 1043	Detail
12	17	80	064085-S-004	Car parts within Feature 1043	Detail
12	17	81	064085-S-004	Tobacco tin within Feature 1043	Detail
12	17	82	064085-S-004	Tobacco tin within Feature 1043	Detail
12	17	83	064085-S-004	Tobacco tin within Feature 1043	Detail
12	17	84	064085-S-004	Melted glass within Feature 1043	Detail
12	17	85	064085-S-004	Wire within Feature 1043	Detail
12	17	86	064085-S-004	"INGLEWOOD" brick within Feature 1043	Detail
12	17	87	064085-S-004	Miscellaneous debris from within Feature 1043	Detail
12	17	88	064085-S-004	Miscellaneous debris from within Feature 1043	Detail
12	17	89	064085-S-004	Miscellaneous debris from within Feature 1043	Detail
12	17	90	064085-S-004	Miscellaneous debris from within Feature 1043	Detail
12	17	91	064085-S-004	Miscellaneous debris from within Feature 1043	Detail
12	17	92	064085-S-004	Feature 1043, PD 1054; Colorless glass pepsi-cola bottle	Detail
12	17	93	064085-S-004	Feature 1043, PD 1054; Colorless glass pepsi-cola bottle	Detail
12	17	94	064085-S-004	Feature 1043, PD 1054; Colorless glass pepsi-cola bottle	Detail
12	17	95	064085-S-004	Feature 1043, PD 1054; Colorless glass pepsi-cola bottle	Detail

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PHOTOGRAPH RECORD

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 Resource Name or #: 064085-2-004 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-19: Frames
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	17	96	064085-S-004	Feature 1043, PD 1054; Colorless glass pepsi-cola bottle	Detail
12	17	97	064085-S-004	Feature 1043, PD 1054; Colorless glass pepsi-cola bottle	Detail
12	17	98	064085-S-004	Feature 1043, PD 1054; Colorless glass pepsi-cola bottle	Detail

Site 064085-S-004 overview looking north/northwest. Photo 1.

Overview of Feature 1043, looking south. Photo 9.

Recorded By: A. Sapula ***Date:** 1/20/2021 ■ Continuation ☐ Update

Overview of Feature 1013 and Sample Area marked within (PD 1044). Photo 12.

Pull tab root beer can from Feature 1043, Sample Area 1044. Photo 32.

Recorded By: A. Sapula ***Date:** 1/20/2021 ■ Continuation ☐ Update

Plan view of Noxzema jar with makers mark in Feature 1043, Sample Area 1045. Photo 36.

Miscellaneous car parts from Feature 1043. Photo 78.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

***Resource Name or #:** 064085-2-005

P1. Other Identifier:

***P2. Location:** ■ **Not for Publication** ☐ **Unrestricted** ***a. County:** Imperial

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Holtville East, CA **Date:** 1983 **T.**15S.; **R** 16E; SW ¼ **of** NW ¼ **of Sec** 36; **B.M.**

c. Address: City: Imperial Zip: 32115-G3

d. UTM: Zone: 11N; 661339mE/ 3630895mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries) SWCA-64085-S-005 is historic refuse scatter consisting of 76 bi-metal pull tab beverage cans, rotary opened fruit cans, meat tins, paint cans, and rotary opened food cans. Glass items included 17 colorless and amber glass bottle fragments and four bottle bases: one colorless and one amber bottle base with Owens-Illinois Glass Company makers marks manufactured beginning in 1954; one colorless glass bottle base with a Latchford Glass Company makers mark manufactured between 1957 and 1989; and one colorless glass bottle base with a Thatcher Manufacturing Company makers mark manufactured between 1944 and 1985. Modern refuse is intermixed within the historic-era debris. No additional features were noted. The site is situated on an alluvial plain with an open aspect, is in [poor/fair/good] condition, and measures 125 m (N/S) x 36 m (E/W).

***P3b. Resource Attributes:** AH4 Privies/dumps/trash scatters

***P4. Resources Present:** ☐Building ☐Structure ☐Object ■Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)
Site 064085-S-0005 overview looking N (0°). Photo 100.

***P6. Date Constructed/Age and Sources:** ■Historic
☐Prehistoric ☐Both

***P7. Owner and Address:**

***P8. Recorded by:**
Omar Rice, William Kendig, Christina Peterson, and Yareli Lopez
SWCA Environmental Consultants,
625 Fair Oaks Ave, Ste. 190
Pasadena, CA 91030

***P9. Date Recorded:** 12/17/2020

***P10. Survey Type:**
Intensive pedestrian

***P11. Report Citation:**
Gittelhough, T., Glenny, W., Bever, M.

2021 Cultural Resources Technical Report in Support of a CUP and EIR for the Vikings Solar Project, Imperial County, California

***Attachments:** ☐NONE ■Location Map ■Sketch Map ■Continuation Sheet ☐Building, Structure, and Object Record ■Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

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Primary #
Trinomial

ARCHAEOLOGICAL SITE RECORD

 ***Resource Name or #:** 064085-2-005

***A1. Dimensions: a. Length:** 15 m. **(E/W) × b. Width:** 11 m. **(N/S)**
Method of Measurement: ☐ Paced ■ Taped ☐ Visual estimate ☐ Other:
Method of Determination (Check any that apply.): ■ Artifacts ☐ Features ☐ Soil ☐ Vegetation ☐ Topography ☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ■ High ☐ Medium ☐ Low Explain: 51-75 % Visibility

Limitations (Check any that apply): ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined ☐ Disturbances ■ Vegetation ■ Other (Explain): 51-75 % Visibility

A2. Depth: Surface ■ None ☐ Unknown Method of Determination:
***A3. Human Remains:** ☐ Present ■ Absent ☐ Possible ☐ Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.): n/a

***A5. Cultural Constituents (**Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.): None.

***A6. Were Specimens Collected?** ■ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)
***A7. Site Condition:** ☐ Good ☐ Fair ☐ Poor (Describe disturbances.):

***A8. Nearest Water** (Type, distance, and direction.)**:** 136′ to freshwater pond (need name and distance)
***A9. Elevation:**
A10. Environmental Setting**:**
The site is situated on an alluvial plain with an open aspect. Sediment is comprised of a pink (Munsell 7.5YR 7/3) silty sandy loam with sub-rounded granitic inclusions. Visibility is fair (26-50%) with vegetation consisting primarily of creosote, salt bush, and fiddleneck.

A11. Historical Information: None.

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ■ 1914-1945 ■ Post 1945 ☐ Undetermined

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations):
This site is an isolated historic-era refuse scatter lacking any areas of concentration to further evaluate. This site is likely a surficial scatter and is not anticipated to contain any additional data potential. The connection of this site with repeated agricultural land over time use may indicate a pattern of episodic refuse disposal. Further, the mixed context of debris and overlap of the historical and modern timelines (as indicated by diagnostic items) further suggest the difficulty in asserting this site's significance as a marker of historic activity, and the present recording efforts during this field visit have captured the extent of the site.

A14. Remarks: None.

A15. References (Documents, informants, maps, and other references):

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.): (See Continuation Form).

Original Media/Negatives Kept at: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030

***A17. Form Prepared by: A. Sapula** **Date:** 1/20/2021
Affiliation and Address: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030

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PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

 Resource Name or #: 064085-2-005 **Year** 2020

Camera Format: Lens Size: Camera Number: EC 19-19: Frames 99-137
Film Type and Speed: Digital Original Media Kept At: SWCA Environmental Consultants, 625 Fair Oaks Ave, Ste. 190 Pasadena, CA 91030
Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	17	99	064085-S-005	Site 064085-S-005 overview	N
12	17	100	064085-S-005	Site 064085-S-005 overview	S
12	17	101	064085-S-005	Site 064085-S-005 overview	E
12	17	102	064085-S-005	Site 064085-S-005 overview	W
12	17	103	064085-S-005	Site 064085-S-005 overview	Detail
12	17	104	064085-S-005	Site 064085-S-005 overview	Detail
12	17	105	064085-S-005	Site 064085-S-005 overview	Detail
12	17	106	064085-S-005	Site 064085-S-005 overview	Detail
12	17	107	064085-S-005	Soft-top, church key opened can	Detail
12	17	108	064085-S-005	Soft-top, church key opened can	Detail
12	17	109	064085-S-005	Soft-top, church key opened can	Detail
12	17	110	064085-S-005	Pull-tab bimetal can	Detail
12	17	111	064085-S-005	Pull-tab bimetal can	Detail
12	17	112	064085-S-005	Pull-tab bimetal can	Detail
12	17	113	064085-S-005	Rotary-opened sanitary can	Detail
12	17	114	064085-S-005	Rotary-opened sanitary can	Detail
12	17	115	064085-S-005	Rotary-opened sanitary can	Detail
12	17	116	064085-S-005	Large fruit can, rotary opened	Detail
12	17	117	064085-S-005	Large fruit can, rotary opened	Detail
12	17	118	064085-S-005	Rotary-opened meat can	Detail
12	17	119	064085-S-005	Rotary-opened meat can	Detail
12	17	120	064085-S-005	Rotary-opened meat can	Detail
12	17	121	064085-S-005	Aerosol paint can	Detail
12	17	122	064085-S-005	Aerosol paint can	Detail
12	17	123	064085-S-005	Aerosol paint can	Detail
12	17	124	064085-S-005	Rotary-opened sanitary can	Detail
12	17	125	064085-S-005	Rotary-opened sanitary can	Detail
12	17	126	064085-S-005	Church key opened beverage can	Detail
12	17	127	064085-S-005	Church key opened beverage can	Detail
12	17	128	064085-S-005	Church key opened beverage can	Detail
12	17	129	064085-S-005	PD 1055: “Owens Illinois” clear glass bottle base	Detail
12	17	130	064085-S-005	PD 1055: “Owens Illinois” clear glass bottle base	Detail
12	17	131	064085-S-005	PD 1056: Latchford clear glass bottle fragment	Detail
12	17	132	064085-S-005	PD 1056: Latchford clear glass bottle fragment	Detail
12	17	133	064085-S-005	PD 1057: “Owens Illinois” amber glass bottle base fragment	Detail
12	17	134	064085-S-005	PD 1057: “Owens Illinois” amber glass bottle base fragment	Detail

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Photographer: CP, BK, OR, YL

Mo.	Day	Exp./ Frame	Resource (Site, Isolate, etc.)	Subject/Description	View Toward
12	17	135	064085-S-005	PD 1057: "Owens Illinois" amber glass bottle base fragment	Detail
12	17	136	064085-S-005	PD 1058: "Thatcher Manufacturing Co." colorless bottle base	Detail
12	17	137	064085-S-005	PD 1058: "Thatcher Manufacturing Co." colorless bottle base	Detail

Recorded By: A. Sapula ***Date:** 1/20/2021 ■ Continuation ☐ Update

Site 064085-S-005 overview looking north. Photo 99.

Detail view of PD 1055: Owens-Illinois clear glass bottle base. Photo 130.

Detail view of PD 1057: Owens-Illinois amber glass bottle base. Photo 133.

Detail view of PD 1058: Owens-Illinois amber glass bottle base. Photo 136

Cultural Resources Technical Report for the Vikings Solar Energy Storage Project, Imperial County, California

JANUARY 2021

PREPARED FOR

Vikings Energy Farm, LLC

PREPARED BY

SWCA Environmental Consultants

CULTURAL RESOURCES TECHNICAL REPORT FOR THE VIKINGS SOLAR ENERGY STORAGE PROJECT, IMPERIAL COUNTY, CALIFORNIA

Prepared for

Vikings Energy Farm, LLC
604 Sutter Street, Suite 250
Folsom, California 95630
Attn: Jamie Nichole Nagel

Prepared by

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Wayne Glenny, M.Sc., RPA

Principal Investigator

Michael Bever, PhD., RPA

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SWCA Project No. 64085

SWCA Cultural Resources Report No. 21-248

January 2021

ABSTRACT

Purpose and Scope: Vikings Energy Farm, LLC, retained SWCA Environmental Consultants (SWCA) to conduct an archaeological cultural resource review in support of the proposed Viking Solar Energy Storage project. The project is located east of the city of Holtville within an unincorporated portion of Imperial County, California. The client proposes to develop a solar energy generation and integrated battery storage facility on a 604-acre parcel (project area). The following study was conducted to analyze any potential impacts this project may have on archaeological resources located in the project area for purposes of compliance with the California Environmental Quality Act (CEQA), including Assembly Bill 52 (AB 52) and relevant portions of Public Resources Code (PRC) Sections 5024.1, 15064.5, 21074, 21083.2, 21084.1, and 21084.2. The lead agency responsible for compliance with CEQA is Imperial County (the County). This report documents the methods and results of a confidential records search of the California Historical Resources Information System (CHRIS), a Sacred Lands File (SLF) search through the Native American Heritage Commission (NAHC), archival research, and a pedestrian field survey used to evaluate the presence or likelihood of the presence of cultural resources within the project area.

Dates of Investigation: SWCA received the results of a CHRIS records search for the project area plus a 0.8-km (0.5-mile) radius on December 9, 2020, at the South Coast Information System (SCIC) located at California State University, San Diego. SWCA received the results of a SLF search from the NAHC on January 11, 2021.

Results: A record search conducted by the SCIC identified 50 previously recorded resources within a 0.8- km (0.5-mile) radius of the project area. Of these 50 resources, three are mapped within the project area itself. The search of the SLF maintained by the NAHC was negative within the project area. The NAHC noted that negative results may not indicate the absence of Native American cultural resources in the area and provided a contact list of 16 Native American tribal organizations that may have knowledge of cultural resources in or near the study area. The County, as lead agency, will conduct its own Native American consultation for the project, as part of its AB 52 responsibilities.

The project area is near natural resources that were important to Native Americans, particularly the shoreline of Lake Cahuilla during its highest stand, such that Native Americans would have been active within the general vicinity. However, background research did not identify any substantial evidence to suggest the project area was a specific area of concentrated Native American activity, such as a seasonal camp or resource gathering site. Furthermore, given the subsequent agricultural use of the project area, it is unlikely that any artifacts or features associated Native American activities that may have once been present on the surface would have been preserved. Archival research documents the use of the project area for agriculture at least as far back as 1950, with established agricultural fields present at that time. This does not, however, preclude the possibility of disturbed or scattered archaeological materials on the ground surface, or intact buried archaeological deposits.

SWCA staff conducted an intensive-level pedestrian survey of the project area. As part of the fieldwork, SWCA archaeologists revisited the locations of the three previously recorded resources but were unable to re-locate two of them (P-13-000304/CA-IMP-304 and P-13-003213/CA-INY-3213). Both are presumed either misplotted or destroyed. As a consequence, the two resources will not be impacted by the project.

The third previously recorded resource (P-13-008333/CA-INY-7835) is the East Highline Canal, which has been previously recommended eligible for the California Register of Historical Resources (CRHR). It therefore qualifies as a historical resource under CEQA, and any adverse impacts to the resources could constitute a significant impact on the environment. This resource will be left in place and avoided and as a consequence will not be impacted by the project.

SWCA archaeologists also documented six new archaeological resources: five historic-era refuse scatters (SWCA-64085-S-001 through SWCA-64085-S-005) and one historic-era isolate (SWCA-64085-ISO-001). SWCA evaluated each of these newly recorded resource for CRHR eligibility, based on surface indicators, and none of the newly identified resources are recommended eligible for the CRHR under any criteria. Since the resources are not considered historical resources for the purposes of CEQA, they need not be considered further.

As a result of this assessment, SWCA concludes that the project as proposed will not have a significant impact on cultural resources. However, there is always a possibility that currently unknown resources could be identified during ground-disturbing activities. In the event that previously unidentified resources are exposed during ground disturbance, work in the immediate vicinity of the find must stop until a qualified archaeologist can evaluate the significance of the find according to the CRHR. Ground-disturbing activities may continue in other areas. If the discovery proves significant under CEQA (Section 15064.5f; PRC 21082) and cannot be avoided by the project, additional work such as archaeological and Native American monitoring, archaeological testing, or data recovery excavation may be warranted. Should any prehistoric or historic-era Native American artifacts be encountered, additional consultation with NAHC-listed Native American tribal groups should be conducted immediately.

The discovery of human remains is always a possibility during ground disturbance; Section 7050.5 of the State of California Health and Safety Code states that no further disturbance shall occur until the Imperial County Coroner has made a determination of origin and disposition pursuant to PRC 5097.98. The Imperial County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric, the Coroner will notify the NAHC, which will determine and notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

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INTRODUCTION

Vikings Energy Farm, LLC (client), retained SWCA Environmental Consultants (SWCA) to conduct an intensive archaeological pedestrian survey to assess the presence or absence of cultural resources in support of the proposed Vikings Solar Energy Storage project. The project is located east of the city of Holtville within an unincorporated portion of Imperial County, California (County) (Figure 1). The client proposes to develop a solar energy generation and integrated battery storage facility on a 604-acre parcel (project area).The following study was conducted to analyze any potential impacts this project may have on archaeological resources located in the project area for purposes of compliance with the California Environmental Quality Act (CEQA), including Assembly Bill 52 (AB 52) and relevant portions of Public Resources Code (PRC) Sections 5024.1, 15064.5, 21074, 21083.2, 21084.1, and 21084.2. The lead agency responsible for compliance with CEQA. This report documents the methods and results of a confidential records search of the California Historical Resources Information System (CHRIS), a Sacred Lands File (SLF) search through the Native American Heritage Commission (NAHC), archival research, and a pedestrian field survey used to evaluate the presence or likelihood of the presence of cultural resources within the project area.

SWCA Cultural Resources Project Manager Wayne Glenny, M.S., Registered Professional Archaeologist (RPA), managed the project. SWCA Assistant Cultural Resources Project Manager Trevor Gittelhough, M.A., RPA, conducted background research and authored the report. Cultural Resources Assistant Project Manager Omar Rice, B.A., led the field work with William Kendig, Christina Peterson, and Yareli Lopez. Anna Belk B.A., GIS specialist, prepared the figures. This report was reviewed for quality assurance/quality control by Michael Bever, Ph.D., RPA, who exceeds the Secretary of the Interior's (SOI) Professional Qualification Standards in archaeology. Copies of the final report will be filed with the project applicant, the South Coast Information Center (SCIC), and SWCA's Pasadena Office.

PROJECT DESCRIPTION

The project proposes to develop a solar energy generation and integrated battery storage facility, with a new generator intertie (gen-tie) to transport the electricity generated on-site to an existing Imperial Irrigation District (IID) transmission line. The approximately 604-acre project area is located at the intersection of East Nelson Pit Road and Graeser Road, in an unincorporated portion of the County, and is composed of three parcels (Assessor's Parcel Numbers 050-070-018-000, 050-070-019-000, and 050- 070-021-000), currently or formally used for agriculture.

The surrounding area contains a mixture of both agricultural and rural/undeveloped lands. The project area is defined by agricultural lands to the west and undeveloped land to north, south, and east, and is bisected by Nelson Pit Road. This location is plotted in Section 36, Township 15 South, Range 16 East as depicted on the U.S. Geological Survey (USGS) Holtville East, California 7.5-minute topographic quadrangles (Figure 2). The project area is bounded by unnamed dirt roads to the north, east, and south, and by the East Highline Canal and Graeser Road to the west (Figure 3).

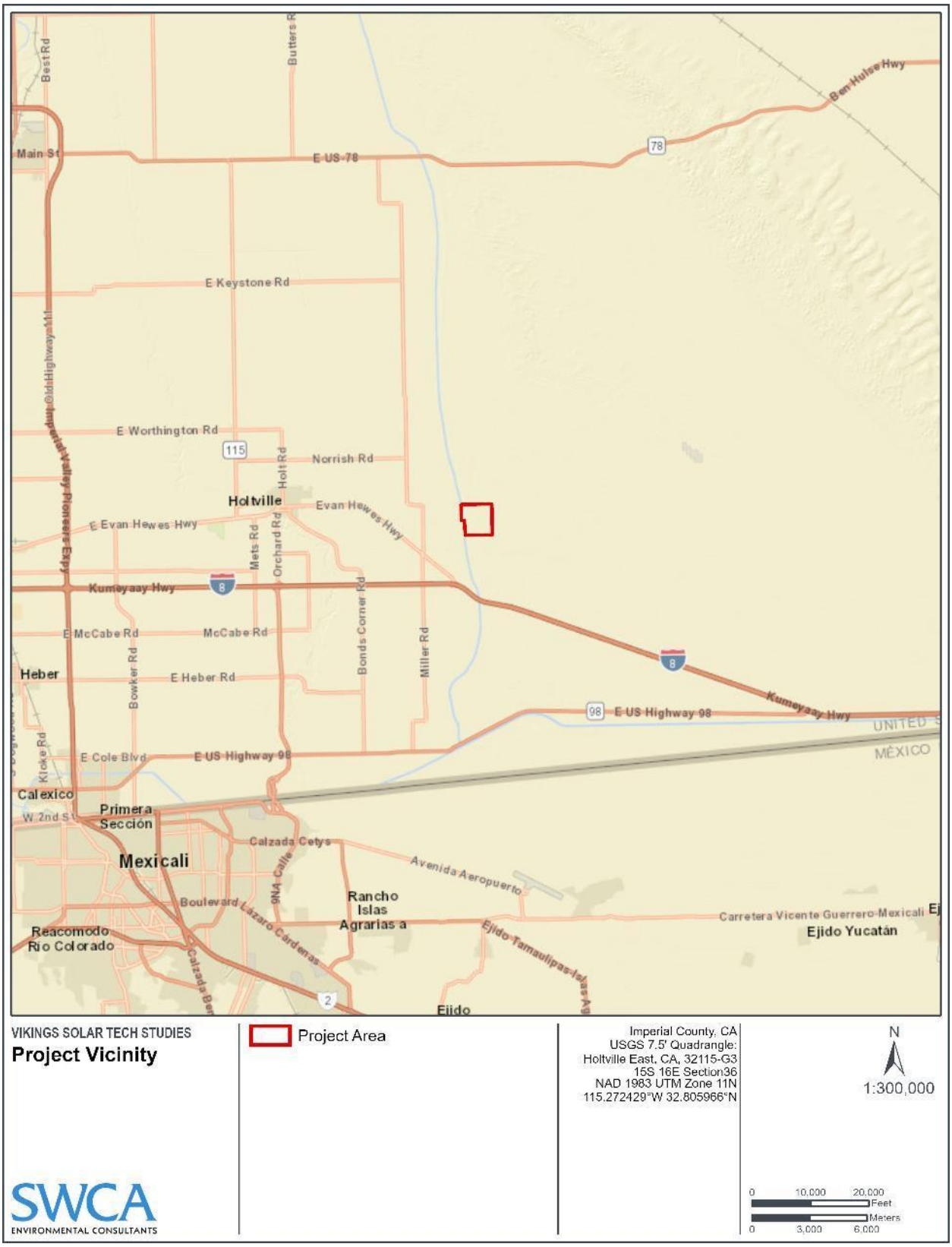

Figure 1. Vicinity

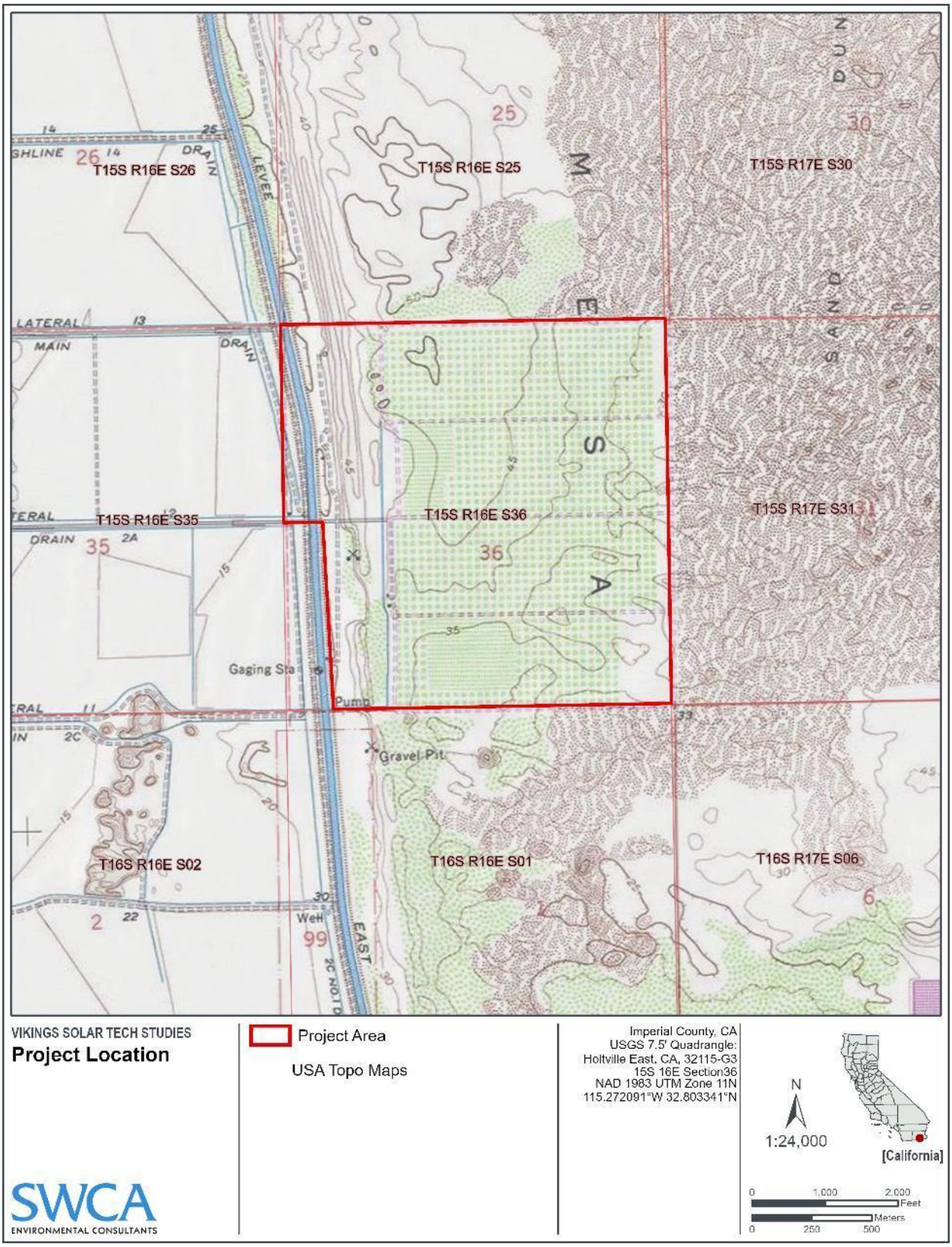

Figure 2. Location

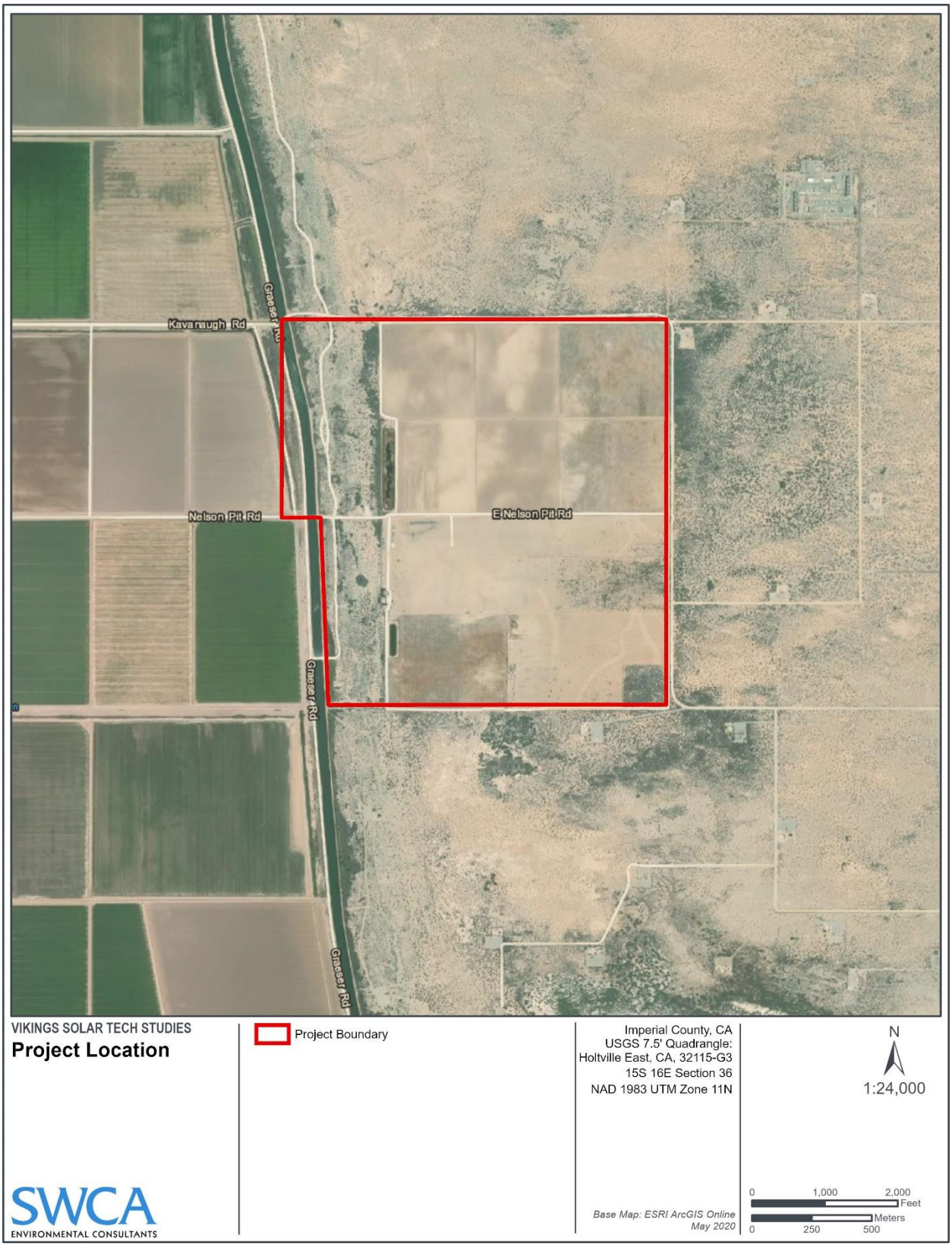

Figure 3. Project Area Map

REGULATORY SETTING

State Regulations

The California Office of Historic Preservation (OHP), a division of the California Department of Parks and Recreation, is responsible for carrying out the duties described in the PRC and maintaining the California Register of Historical Resources (CRHR). The state-level regulatory framework also includes CEQA, which requires the identification and mitigation of substantial adverse impacts that may affect the significance of eligible historical and archaeological resources.

California Environmental Quality Act

CEQA requires a lead agency to analyze whether historic and/or archaeological resources may be adversely affected by a proposed project. Under CEQA, a "project that may cause a substantial adverse change in the significance of a historic resource is a project that may have a significant effect on the environment" (PRC 21084.1). Answering this question is a two-part process: first, the determination must be made as to whether the proposed project involves cultural resources. Second, if cultural resources are present, the proposed project must be analyzed for a potential "substantial adverse change in the significance" of the resource.

HISTORICAL RESOURCES

According to CEQA Guidelines Section 15064.5, for the purposes of CEQA, historical resources are as follows:

- A resource listed in, or formally determined eligible…for listing in the CRHR (PRC 5024.1, Title 14 California Code of Regulations [CCR], Section 4850 et seq.).
- A resource included in a local register of historical resources, as defined in PRC 5020.1(k), or identified as significant in a historic resources survey meeting the requirements of PRC 5024.1(g).
- Any object, building, structure, site, area, place, record, or manuscript that the lead agency determines to be eligible for national, state, or local landmark listing; generally, a resource shall be considered by the lead agency to be historically significant (and therefore a historic resource under CEQA) if the resource meets the criteria for listing in the CRHR (as defined in PRC 5024.1, 14 CCR 4852).

Resources nominated for the CRHR must retain enough of their historic character or appearance to convey the reasons for their significance. Resources whose historic integrity (as defined above) does not meet the National Register of Historic Places (NRHP) criteria may still be eligible for listing in the CRHR.

According to CEQA, the fact that a resource is not listed in or determined eligible for listing in the CRHR or is not included in a local register or survey shall not preclude the lead agency from determining that the resource may be a historical resource (PRC 5024.1). Pursuant to CEQA, a project with an effect that may cause a substantial adverse change in the significance of a historical resource may have a significant effect on the environment (CEQA Guidelines Section 15064.5[b]).

Substantial Adverse Change and Indirect Impacts to Historical Resources

CEQA Guidelines specify that a "substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines Section 15064.5). Material impairment occurs when a project alters in an adverse manner or demolishes "those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion" or eligibility for the NRHP, CRHR, or local register.
In addition, pursuant to CEQA Guidelines Section 15126.2, the "direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects."

The following guides and requirements are of particular relevance to this study's analysis of indirect impacts to historic resources. Pursuant to CEQA Guidelines (Section 15378), study of a project under CEQA requires consideration of "the whole of an action, which has the potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment." CEQA Guidelines (Section 15064[d]) further defines direct and indirect impacts as follows:

(1) A direct physical change in the environment is a physical change in the environment which is caused by and immediately related to the project.

(2) An indirect physical change in the environment is a physical change in the environment which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect physical change in the environment.

(3) An indirect physical change is to be considered only if that change is a reasonably foreseeable impact which may be caused by the project.

ARCHAEOLOGICAL RESOURCES

In terms of archaeological resources, PRC 21083.2(g) defines a "unique archaeological resource" as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If it can be demonstrated that a proposed project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (PRC Sections 21083.2[a], [b], and [c]). CEQA notes that, if an archaeological resource is neither a unique archaeological resource nor an historical resource, the effects of the project on those resources shall not be considered to be a significant effect on the environment (CEQA Guidelines Section 15064.5[c][4]).

CALIFORNIA STATE ASSEMBLY BILL 52

AB 52 of 2014 amended PRC 5097.94 and added PRC 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3.

Consultation with Native Americans

AB 52 formalizes the lead agency–tribal consultation process, requiring the lead agency to initiate consultation with California Native American groups that are traditionally and culturally affiliated with a project, including Tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report.

Tribal Cultural Resources

Section 4 of AB 52 adds Sections 21074(a) and 21074(b) to the PRC, which address tribal cultural resources and cultural landscapes. Section 21074(a) defines "tribal cultural resources" as one of the following:

(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
   (A) Included or determined to be eligible for the CRHR.
   (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

(2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Section 1(a)(9) of AB 52 establishes that "a substantial adverse change to a tribal cultural resource has a significant effect on the environment." Effects on tribal cultural resources should be considered under CEQA. Section 6 of AB 52 adds Section 21080.3.2 to the PRC, which states that parties may propose mitigation measures "capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource." Further, if a California Native American tribe requests consultation regarding project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (PRC Section 21080.3.2[a]). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (PRC Section 21082.3[a]).

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

Created in 1992 and implemented in 1998, the CRHR is "an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Sections 21083.2 and 21084.1). Certain properties, including those listed in or formally determined eligible for listing in the NRHP and California Historical Landmarks numbered 770 and higher, are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest program, identified as significant in historical resources surveys, or designated by local landmarks programs may be nominated for the CRHR. According to PRC 5024.1(c), a resource, either an individual property or a contributing element of a historic district, may be listed in the CRHR if

the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on NRHP criteria:

- **Criterion 1:** It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- **Criterion 2:** It is associated with the lives of persons important in our past.
- **Criterion 3:** It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- **Criterion 4:** It has yielded, or may be likely to yield, information important in history or prehistory.

Resources nominated for the CRHR must retain enough of their historic character or appearance to convey the reasons for their significance. Resources whose historic integrity does not meet NRHP criteria may still be eligible for listing in the CRHR.

Treatment of Human Remains

The disposition of burials falls first under the general prohibition on disturbing or removing human remains under California Health and Safety Code Section 7050.5. More specifically, remains suspected to be Native American are treated under CEQA in CCR 15064.5; PRC 5097.98 illustrates the process to be followed in the event that remains are discovered. In the event that human remains are discovered during excavation activities, the following procedure shall be observed:

- Stop immediately and contact the County Coroner:

  Imperial County Coroner
  328 Applestill Road
  El Centro, California
  (760) 339-6311

- If the remains are determined to be of Native American descent, the Coroner has 24 hours to notify the NAHC.
- The NAHC will immediately notify the person it believes to be the most likely descendant (MLD) of the deceased Native American.
- The MLD has 48 hours to make recommendations to the landowner, or representative, for the treatment or disposition, with proper dignity, of the human remains and grave goods.
- If the owner does not accept the MLD's recommendations, the owner or the MLD may request mediation by the NAHC.

ENVIRONMENTAL SETTING

The project vicinity is generally characterized by agricultural and rural/undeveloped land uses, located within an alluvial plain with an open aspect. The project area consists of three parcels, with the largest of the three, Parcel 1 (APN 050-070-018-000), stretching from Kavanaugh Road in the north to East Highline Lateral Eleven in the south. This parcel is composed of several agricultural fields, with active fields in the northern portion and fallow fields in the south and east. Parcel 2 (APN 05-070-019-000) is located in the northwest portion of the project and is bounded by the East Highline Canal to the west, Kavanaugh Road to the north, Parcel 1 to the east, and East Nelson Pit Road to the south. This area consists of a mixture of riparian and high desert vegetation, including creosote and arrowweed. Parcel 3

(APN 050-070-021-000) is located in the southwestern portion of the project area and is bounded by East Nelson Pit Road to the north, Parcel 1 to the east, Highline Lateral Eleven Canal on the south, and East Highline Canal to the west. Vegetation in this area is similar to that in Parcel 2.

CULTURAL SETTING

Prehistory

The project is in the Colorado River subregion of the Desert Archaeological Region, one of eight arbitrary organizational divisions of the state (; Moratto 1984). This subregion includes the Colorado and Mojave Deserts in the southeastern corner of the state east of the Peninsular and Traverse Ranges and south of the Sierra Nevada and Great Basin provinces. The subregion includes the Salton Trough, all of Imperial County, and most of Riverside, southern San Bernardino, and eastern San Diego Counties.

The region's cultural chronology can be divided into five primary developmental periods: Paleoindian (pre-6000 BCE), Early Archaic/Pinto complex (6000 to 2000 BCE), Late Archaic/Gypsum Period (2000 BCE to CE 900), Late Prehistoric/Patayan Period (CE 500 to Spanish contact [1769]), and the Historic Period (AD 1769 to 1950). The four prehistoric periods are summarized below in Table 1.

Although now an arid region, at different periods during the Holocene a lake, collectively referred to as Lake Cahuilla (Lake LeConte, Blake's Sea), covered the Salton Sea basin of the Colorado Desert area. Lake Cahuilla was formed by the western diversion of the Colorado River into the Salton Trough when natural sediment barriers blocked the river's flow south to the Gulf of California. Today's Salton Sea is technically an agricultural drainage reservoir that receives 90 percent of its inflow from runoff originating in the Imperial, Coachella, and Mexicali Valleys. After periodic episodes of infilling and recession, Lake Cahuilla is believed to have receded for the last time around A.D. 1580, with a brief inundation in the mid- to late 1600s (Buckles and Krantz 2005; Laylander 1995; Waters 1983). As discussed below, the resources associated with the lake were key factors in human subsistence and settlement patterns during most of the Prehistoric Period.

A cultural sequence for the Colorado Desert has been recently summarized by Schaefer (1994) under three major periods: Paleoindian, Archaic, and Late Prehistoric. These periods date between ca. 10,000– 6000 B.C., 6000 B.C.–A.D. 500, and A.D. 500–Historic Contact, respectively. The introduction of pottery in this area separates the Archaic from the Late Prehistoric Period. The Archaic Period is divided here into Early and Late, dating between ca. 6000–2000 B.C. and 2000 B.C.–A.D. 500. In the Great Basin, the Archaic is also referred to as the Desert Culture (Jennings 1964; Moratto 1984; Warren 1967). Following numerous elements of earlier syntheses for California's desert region (e.g., Rogers 1929, 1966, 1989; Warren 1980, 1984), the cultural patterns within these broad periods are defined in this area as the San Dieguito Complex, Pinto Period, Gypsum Period, and Patayan Period. The Patayan Period is further subdivided into three periods, Patayan I–III (Rogers 1945; Waters 1982).

Within the Colorado Desert, there are no documented Paleoindian sites, and scant evidence relating to the Early Archaic. As noted by Schaefer (1994:65), few stratified archaeological sites within the Colorado Desert, such as Indian Hill Rockshelter in Anza-Borrego Desert State Park, have been dated to the Late Archaic, although excavations within the Coachella Valley added to our knowledge of the Late Archaic in this area (Love and Dahdul 2002).

Paleoindian Period (ca. 10,000–6000 B.C.)

In contrast to the dry climate of today, during the Paleoindian Period, California's desert regions during the late Pleistocene and the early Holocene contained a series of large, pluvial lakes. Archaeological evidence suggests that early Holocene hunter-gathers of the desert region were well adapted to the wetland environments supported by these lakes. Sites were typically located on or near the shores of former pluvial lakes and marshes, and have artifact assemblages marked by their diversity of flaked-stone artifacts. Such sites, however, have not been documented for the Colorado Desert region, including for the nearly 10,000-year-old pluvial shoreline of Lake Cahuilla (Moratto 1984:96).

The San Dieguito Complex is a well-defined expression or cultural pattern of the Paleoindian Period in the California desert region. Although named for the cultural sequence in western San Diego County (Rogers 1929, 1989), the complex now incorporates additional local patterns and covers the Colorado and Mojave Deserts and the western Great Basin (referred to as the "Central Aspect") (Rogers 1966; Warren 1967). Leaf-shaped points and knives, crescents, and scrapers characterize the artifact assemblages throughout the region. To reduce terminological confusion, Moratto (1984:92) subsumed the numerous local patterns (including the Lake Mojave Period of Warren [1967]) under the overarching Western Pluvial Lakes Tradition (WPLT), first defined by Bedwell (1970). Recent literature on the prehistory of the Colorado Desert, however, typically references the Paleoindian Period or San Dieguito Complex, rather than the WPLT.

Early Archaic/Pinto Period (6000–2000 B.C.)

As the environment transitioned from the pluvial conditions of the Pleistocene to the more arid Holocene climate, many of the lakes and wetlands present during the Paleoindian Period began to dry up. By the Early Archaic or Pinto Period, many of these wetlands had disappeared. Desert populations appear to have adapted to these more arid conditions by withdrawing to the margins of the desert or concentrating around the few oases still present within it (Warren 1984:413–414). A brief period of moister conditions may have led to a temporary reoccupation of the desert region between 4500 and 3500 B.C. However, evidence from the Mojave Desert and western Great Basin sites suggests that most Pinto Period sites were temporary, seasonal camps of small, highly mobile groups. Slab metates and handstones (a milling stone set used to process hard seeds), shaped scrapers, and the Pinto projectile point characterize the artifact assemblages of the Pinto Basin Complex.

Late Archaic/Gypsum Period (2000 B.C.–A.D. 500)

The beginning of the Late Archaic or Gypsum Period coincides with the beginning of the Little Pluvial, a brief period of moister climatic conditions. By the second half of the Gypsum Period, arid conditions returned. Desert peoples appear to have been well adapted to these conditions by this time, however, and there was no notable drop in population. Gypsum Period sites are characterized by a wider range of diagnostic projectile points, such as the Gypsum and Elko types, as well as split-twig figurines, the latter typically preserved in caves (Warren 1984:416–417). While handstones and metates continued to be employed, a new milling stone technology tool set, mortars and pestles, was introduced during this period of time. Based on ethnographic analogy and site location, Warren (1984:419) suggests that mortars and pestles were used to process mesquite pods. Near the end of this period, the bow and arrow also appear to have been introduced. In addition, this period is marked by an increased presence of exotic trade goods, including shell ornaments from the Pacific Coast.

Recent excavations at a dozen Late Archaic Period sites in the Colorado Desert indicate occupation on the shores of Holocene Lake Cahuilla was restricted to specialized temporary camps, used for fishing, trapping, and gathering resources (Love and Dahdul 2002:81). In contrast, the range of types and density

of artifacts at a site north of La Quinta (CA-RIV-2936) suggested that the permanent or semipermanent occupation there was not dependent on lacustrine resources (Love and Dahdul 2002). Long-distance trade is evidenced in these assemblages by the presence of obsidian from the Coso volcanic field in Inyo County and shell beads from the Gulf of California.

Late Prehistoric/Patayan Period (A.D. 500–Historic Contact)

The period from the end of the Archaic Period to European contact was a time of complex and ongoing change in material culture, burial practices, and subsistence focus. These changes most likely reflect both in situ cultural adaptations in response to shifts in environmental conditions, as well as influences from outside the area. The Late Prehistoric is identified with the introduction of pottery and is marked by stronger regional differentiation. While the artifact assemblages are similar to those of the Gypsum Period, there are some notable differences. In addition to ceramics, the period is distinguished by the introduction of cremation in the archaeological record. In general, projectile points are smaller and triangular in shape. Regional differentiation in the distribution of projectile point and pottery types was due, in part, to trade and influences of neighboring cultures in the Lower Colorado River and Great Basin. Such influence includes the major migration into southern California of Takic-speaking people (Uto- Aztecan language group) from the Great Basin region (Nevada, Utah, and eastern California) (Warren 1968).

Within the Colorado Desert region, the Patayan sequence cultural pattern is divided into three periods with different pottery types and regional site distributions. Cottonwood Triangular and Desert-Side Notched projectile points, the change from extended inhumations to cremations, the introduction of pottery, networks of trail systems (with pot-drops and trail-side shrines), and the late introduction of small-scale agriculture characterize the Patayan period in general. Pottery is increasingly common throughout the period, including brown wares manufactured from upland clay sources (e.g., Tizon Brown Ware) and buff wares made from lowland clays (e.g., Colorado Buff Ware). Material culture also included clay figurines and pipes, bedrock grinding slicks and mortars, worked bone tools, and rock art. Exchange networks are indicated by shell beads from the coast and Gulf of California, wonderstone from Rainbow Rock near today's Imperial City, and obsidian from the Obsidian Butte source at the southern end of today's Salton Sea, which at times was covered by the waters of Holocene Lake Cahuilla. As discussed further below, the cyclical filling and desiccation of Lake Cahuilla dictated the settlement patterns in the Salton Trough and Coachella Valley during this period.

During Patayan I (ca. A.D. 800–1050), mobile groups settled seasonally along the Lower Colorado River, practicing a mixed hunter-gatherer and horticultural economy. Their tool kit included pottery and Cottonwood Triangular and Desert-Side Notched projectile points. The agricultural-based Hohokam on the upper Gila River likely influenced this cultural pattern. Patayan II (ca. A.D. 950–1500) is characterized by the spread of these cultural traits from the Colorado River into the Colorado and Mojave Deserts. It also coincides with the infilling of Lake Cahuilla, as well as locally manufactured new ceramic types, such as Tizon Brown Ware. Patayan III (A.D. 1500 to European contact) is marked by the recession of Lake Cahuilla, the occurrence of specific pottery types (Colorado Buff Ware and painted pottery), and the practice of small-scale agriculture.

Ethnographic Overview

The project area is most closely associated with the Kumeyaay, although other groups, such as the Quechan, are known to have visited the region to access the abundant resources associated with Lake Cahuilla or its associated rivers, or passed through the area during travel between the coast and the lower Colorado River.

Native Americans who lived in the vicinity of Mission San Diego de Alcalá were given the name Diegueño by Spanish missionaries. Today, Native names have supplanted the European-derived term. The people who traditionally occupied the region along the Pacific Coast from central San Diego County southward into Baja California and eastward into Imperial County, refer to themselves as Kumeyaay (Shipek 1987). Linguistic studies support the division of these people into northern (Ipai) and southern (Tipai) dialect groups (Luomala 1978). Although the term Kumeyaay is restricted by some scholars to part or all of the southern dialect group (e.g., Carrico 1987;; Mithun 2001), this report uses the name in its broader sense. The eastern (Imperial County) bands of Tipai speakers were formerly known as the Kamia (Gifford 1931). The boundary between the northern and southern Kumeyaay was not fixed prior to European contact and it is likely that the distinction between them existed as a gradient rather than a clearly divided and separate cultural and political unit (Carrico 1987). These groups were united by their closely related Yuman languages, as well as their customs, beliefs, and material culture.

The Kumeyaay occupied the Pacific Coast from around Agua Hedionda Lagoon, south to a point below Ensenada and Todos Santos Bay in Baja California, Mexico. Their territory stretched inland throughout the Cuyamaca and Laguna Mountains into the Yuha and Anza Borrego deserts of Imperial County (Carrico 1987; Luomala 1978). Consequently, residents of this region had access to an extremely varied set of environments. Neighboring groups included the Luiseño and Cupeño to the northwest, the Cahuilla to the northeast, the Quechan to the east, and the Pai-pai to the south (Kroeber 1976).

Kumeyaay winter villages were located in sheltered valleys near reliable sources of water with the entire band present. Dwellings in the relatively permanent winter villages were semisubterranean and roughly circular, with a wooden pole framework covered with brush thatch. The main entrance had a mat covering to keep out the wind and ensure privacy, and ritually faced the east (Luomala 1978:597). Other structures in the village consisted of family-owned platform granaries, a village-owned brush ceremonial enclosure, and sweat lodges. A semicircular enclosure was used for the keruk mourning ceremony, and rock walls sometimes surrounded ceremonial and dance areas. At their summer camps, ramadas and windbreaks were common, built into trees or rock shelters. Granaries and more permanent housing would sometimes be constructed within frequently visited oak groves. The dead were cremated, the ashes buried or placed in ceramic urns that were then buried or placed in caves.

Kumeyaay territory was divided among bands that generally controlled 10 to 30 miles within a drainage system (Shipek 1982:297). Each band was composed of five to 15 kinship groups (sibs or shiimul) (Kroeber 1976:719; Shipek 1987:8), some of which were divided among more than one band. There were approximately 50 to 75 named sibs throughout the territory. Each band had a chief or kwaaypaay who lived in its central village. The chief was responsible for the bulk of intra- and inter-band affairs, directing ceremonies, giving advice, resolving disputes, etc. The position of chief was hereditary and commonly was passed on to the eldest son, but he also had to meet with the approval of neighboring kwaaypaay (Shipek 1982:298). Other specialists within the band included an assistant chief, singers, and dancers, whose roles were similar to the roster of ceremonialists within the neighboring Luiseño and Cahuilla.

All of the Ipai and many of the Tipai camped in coastal valleys at certain times of the year and gathered coastal resources. Fish were taken with hooks, nets, and bows, often from tule reed boats. Abundant shellfish were gathered from the sandy beaches (e.g., Chione spp., scallops, and Donax spp.) and rocky shores (e.g., mussels and abalone). Common game birds included doves and quail; migratory birds included geese. Most meat was from rabbits, woodrats, and other small game living along the mesas and foothills, caught mainly with throwing sticks, bow and arrow, or in nets during community drives. Hunting large game such as deer and mountain sheep was the role of expert hunters trained in specialized lore (Luomala 1978:601). Land resources generally belonged to the bands; few areas were considered "tribal" and open to anyone (Shipek 1982:301).

Small game and seasonal herbs flourished during the winter rainy season in the valleys. Fresh greens included miner's lettuce, clover, pigweed, and grasses. Seeds were harvested from buckwheat, chia and other salvias, *Atriplex* spp., peppergrass, and a variety of grasses. In the mountains and foothills, yucca was gathered for its stalks, flowers, and leaves. Elderberry, manzanita, cholla and prickly-pear cactus, and juniper shrubs provided berries and fruit. People heavily depended on the acorns from several species of oak that were gathered during the late summer and stored in family and village granaries. For those Kumeyaay in the desert areas, mesquite replaced acorns as the primary staple. Mesquite pods and seeds would be gathered in large quantities and pounded into flour. During the late spring and summer, small groups foraged in favored spots, usually at progressively higher elevations as various resources ripened. In the early fall, people would move to the mountain oak groves, returning to the primary encampment just prior to the onset of winter.

Members of the Tribe who lived in the eastern deserts had access to tributaries of the Colorado River. Following the example of their River Yuman farming cousins, they planted maize, beans, teparies, and melons in newly flooded lands (Luomala 1978:600). All the Kumeyaay practiced plant husbandry to "maintain and increase supplies of native foods" (Shipek 1987:12). This included sowing grass seed on burned fields, transplanting wild onions and tobacco, planting cuttings of prickly-pear cactus near village sites, and clearing lands for planting seeds of greens, shrubs, and specific trees. Like all coastal California Natives, they burned grasslands to improve the grass and to keep the chaparral from encroaching. Along with bettering the seed harvest, this practice also maintained more forage for the deer and antelope that they hunted.

The clothing of the Tipai and Ipai was minimal. Robes of rabbit, willow bark, or deerskin were worn in the winter and also served as bedding. Men and children wore utilitarian belt sashes and pouches designed to hold tools and small game, while women wore a one- or two-piece apron made of shredded bark, and a round, twined cap. When traveling long distances, sandals woven from agave fibers were used (Luomala 1978:599).

Kumeyaay baskets were of the same weave, forms, and high quality found elsewhere in southern California. Carrying nets and sacks were also produced. Pottery was commonly manufactured. Along with decorated cooking pots, water jars, and storage pots (Kroeber 1976:722), pots were also commonly used as cremation urns. The Kumeyaay made and traded curved clay pipes, stone pipes, and medicine sucking tubes. Along with a variety of hunting gear, the Kumeyaay made tule watercraft with a double-bladed paddle (Kroeber 1976:723). For warfare, along with bows and arrows, they made a war club of mesquite. Both gourd and turtle-shell rattles were made; deer-hoof rattles were used in a mourning ceremony.

The religious mythologies of the Tipai-Ipai were locally variable. The most common world creation myth is closely tied to the Colorado River and Desert region (Luomala 1978:604). In this myth, the major geographic points are mountains beside the Colorado River, suggestive of the close ties and origins the Kumeyaay had with the other Yuman peoples. Other holy places recognized by all the Kumeyaay were Kuuchama or Tecate Peak, and Wee'ishpa or Signal Mountain (Shipek 1987:14). Ceremonies among the Kumeyaay are similar to those of other southern California Native peoples (Kroeber 1925:712–717), including puberty rites, marriage, naming, cremation of the dead, and the annual mourning ceremony (keruk) for all those of the sib who had died the previous year. The ceremonial leader, an inherited religious position, conducted these rituals. Other specialists, shamans (kuseyaay), or healers performed other more private rituals for themselves or others (Shipek 1982:299).

After the establishment in A.D. 1769 of the presidio at San Diego and the Mission San Diego de Alcalá, the conversion and physical removal from their territory (through the reduccion process) and the loss of land by the local Kumeyaay negatively impacted their lifeways and traditional subsistence strategies

(Carrico 1987). Many of the Native inhabitants of the valley eventually worked for the mission, but there was a feeling of nationality among the Kumeyaay, a level of federation seen among other southern California native groups (Shipek 1987:5). This was dramatically expressed in a revolt against the Spanish soldiers and priests in A.D. 1775 when hundreds of warriors from a score of villages reaching from the Pacific Coast well into the Yuha Desert combined forces and coordinated a night attack. Afterward, the inland kwaaypaay jointly organized lookouts to warn of Spanish reprisal expeditions. There was also a kuuchult kwaataay, a leader who, when the need arose, was responsible for interaction with other Tribes (Shipek 1982:301).

Unrest among the local Native Americans, the threat of foreign invasion and political dissatisfaction kept local growth around the San Diego Mission to a minimum until Mexico gained freedom from Spain in 1822. Only then did development occur beyond the walls of the presidio in the area known as Old Town. As the missionaries had civil as well as religious authority over their converts, title to the land passed from the clans to the priests to hold in trust until such time the missionaries felt the Indians had sufficiently learned Spanish European ways of living and governing themselves. Before repatriation might have occurred, however, the colonial population of Mexican California had grown and the settlers demanded more and more of the "mission" lands. Many Indian neophytes left the mission grounds when in 1825 the Mexican government freed the Native Americans from mission control. When the missions were fully secularized in 1834–1836, more people left for work on the large cattle ranchos being carved out of the mission lands that were not needed for the support of the dwindling neophyte population.

As a result of the Mexican-American War in 1846, California officially became a part of the United States in 1848 with the signing of the Treaty of Guadalupe Hidalgo. Several Kumeyaay leaders signed the statewide 1852 treaty, but Congress never ratified it. Several reservations were formed after the mid-1870s in the Cuyama and Palomar Mountains and nearby valleys from Kumeyaay lands. These include Barona Ranch, Campo, Cuyapaipe, Inaja and Cosmit, Los Coyotes (shared with Mountain Cahuilla), Manzanita, Mesa Grande, Santa Ysabel, Sycuan, and Viejas (California Indian Assistance Program 2003). No lands were allowed for the remaining coastal people–these flatter, richer lands had already been taken over by the Mexican rancheros. There had been other Ipai settlements, such as San Pasqual and the outer edge of San Diego (now Balboa Park), but these were given to the general public for homesteading. Additional Ipai lands were lost with the creation of water reservoirs, such as at Capitan Grande. Over the four decades following United States control, many of the ranchos became small farms and towns. The Kumeyaay who remained around the mission grounds associated with the ranches, working cattle and sheep, and maintained their own subsistence gardens.

During the 1920s, many Kumeyaay became members of the Mission Indian Federation, which was organized to fight for self-rule on southern California reservations. During World War II many people moved off the reservations to work in war-related industries in the Los Angeles and San Diego urban areas, and after the war, local Native American veterans took advantage of educational benefits. The next generation thus saw fewer people working on the ranches and farms. As of 2003, there were more than 2,570 enrolled members on 10 of the Kumeyaay reservations (California Indian Assistance Program 2003).

There is no Kumeyaay reservation in the vicinity of the project area, but the tribal people from the Anza- Borrego Desert region joined with others and resettled on the Campo and Manzanita Reservations. Campo was established by an act of Congress in 1891, with 1,890 acres, but more land was set aside in the 1910s for a total of 15,480 acres. Manzanita was established by an act of Congress in 1893, with 4,579 acres in the Jacumba Mountains. In 2003, there were 390 people enrolled at these two reservations, 350 of them living there (California Indian Assistance Program 2003:76, 116).

Historical Overview

The post-contact history of California is divided into three periods: the Spanish (1769–1822), Mexican (1822–1848), and American (1848–present) Periods. The Spanish Period began with the establishment of a mission and presidio (fort) in San Diego in 1769 by the Spanish, and included the construction of 21 missions between 1769 and 1822. The Mexican Period began with independence from Spain and ended with the signing of the Treaty of Guadalupe Hidalgo in 1848. The American Period began with the end of the Mexican-American War and included California becoming a territory of the United States. The following sections provide a brief overview of each period and are followed by a discussion of the regional history of Imperial County.

Spanish Period (1769–1822)

Some of the first expeditions by Spanish explorers along the southern coast of California occurred between the mid-1500s and the mid-1700s. One explorer, Juan Rodríquez Cabríllo, was searching for the legendary Northwest Passage when he stopped in 1542 in what is known today as San Diego Bay. Franciscan missionary Father Junípero Serra established the Mission San Diego de Alcalá at Presidio Hill, following the directive of the King of Spain that the Franciscan Order would direct religious and colonial matters in the American territories. The Mission San Diego de Alcalá was the first of 21 missions established in Alta California between 1769 and 1823.

Captain Juan Bautista de Anza was the first to establish overland connections between California and Mexico. In 1774, he led a group of 34 padres, soldiers, and others across the Colorado River into the present-day Imperial Valley. Father Francisco Garcés charted the route in 1770, and led de Anza through present-day Imperial County along the Alamo River drainage (National Park Service 2018). The expedition continued northwest, traveling into present-day Riverside County through the Cahuilla Valley, following the Santa Rosa Mountains and continuing through Coyote Canyon and San Jacinto Valley, eventually ending up in Monterey Bay (Brown 1998. De Anza led another expedition along the same route in 1775 with a larger group and continued all the way to San Francisco Bay (Guerrero 2006).

After the expeditions of de Anza, several missions were established in the 1770s as far north as San Francisco. The 21 missions were parallel to the California coastline between present-day San Diego and Sonoma, with the coastline positions easy to defend and supply by ships. The missions were also placed near large populations of Native Americans, their potential converts. The roadway connecting the missions became known as “El Camino Real,” with the current Interstate 5 and U.S. Highway 101 generally following the old road’s footprint. Three fortified posts were established in Alta California in addition to the Presidio of San Diego: the Presidio of Monterey was established in 1770, the Presidio of San Francisco in 1776, and the Presidio of Santa Barbara in 1782.

Mexican Period (1822–1848)

A major emphasis during the Spanish Period in California was the construction of missions and associated presidios to integrate the Native American population into Christianity and communal enterprise. Incentives were also provided to bring settlers to pueblos or towns, but just three pueblos were established during the Spanish period, only two of which were successful and remain as California cities (San José and Los Angeles). Several factors kept growth within Alta California to a minimum, including the threat of foreign invasion, political dissatisfaction, and unrest among the Indigenous population. After more than a decade of intermittent rebellion and warfare, New Spain (Mexico and the California territory) won independence from Spain in 1821. In 1822, the Mexican legislative body in California ended isolationist policies designed to protect the Spanish monopoly on trade, and decreed California ports open to foreign merchants.

Extensive land grants were established in the interior during the Mexican period, in part to increase the population inland from the more settled coastal areas where the Spanish had first concentrated their colonization efforts. The secularization of the missions following Mexico's independence from Spain resulted in the subdivision of former mission lands and establishment of many additional ranchos.

During the supremacy of the ranchos (1834–1848), landowners largely focused on the cattle industry and devoted large tracts to grazing. Cattle hides became a primary southern California export, providing a commodity to trade for goods from the east and other areas in the United States and Mexico. The number of non-Native inhabitants increased during this period because of the influx of explorers, trappers, and ranchers associated with the land grants. The rising California population contributed to the introduction and rise of diseases foreign to the Native American population, who had no associated immunities.

American Period (1848–Present)

War in 1846 between Mexico and the United States began at the Battle of Chino, a clash between resident Californios and Americans in present-day San Bernardino County, California. This battle was a defeat for the Americans and bolstered the Californios' resolve against American rule, emboldening them to continue the offensive in later battles at Dominguez Field and in San Gabriel. However, this early skirmish was not a sign of things to come, and the Americans were ultimately the victors of this 2-year war.

The United States took control of California in 1846, seizing Monterey, San Francisco, San Diego, and Los Angeles with little resistance. Los Angeles soon slipped from American control, however, and needed to be retaken in 1847. Approximately 600 U.S. sailors, marines, Army dragoons, and mountain men converged under the leadership of Colonel Stephen W. Kearney and Commodore Robert F. Stockton in early January of that year to challenge the California resistance, which was led by General Jose Maria Flores. The American party scored a decisive victory over the Californios in the Battle of the Rio San Gabriel and at the Battle of La Mesa the following day, effectively ending the war and opening the door for increased American immigration (Harlow 1992:193–218). Hostilities officially ended with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for the conquered territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming and representing nearly half of Mexico's pre-1846 holdings.

California officially became the 31st state with the Compromise of 1850, which also designated Utah and New Mexico (with present-day Arizona) as U.S. territories (Wilkman and Wilkman 2006:15). Horticulture and livestock, based primarily on cattle as the currency and staple of the rancho system, continued to dominate the southern California economy through 1850s. The Gold Rush began in 1848, and with the influx of people seeking gold, cattle were no longer desired mainly for their hides but also as a source of meat. During the 1850s cattle boom, rancho vaqueros drove large herds from southern to northern California to feed that region's burgeoning mining and commercial boom. Cattle were at first driven along major trails or roads such as the Gila Trail or Southern Overland Trail, then were transported by trains when available. The cattle boom ended for southern California as neighbor states and territories drove herds to northern California at reduced prices. Flooding that began in the Central Valley of California in December 1861 was followed by 2 years of severe drought and also played a role in ending the cattle boom. Operation of the huge ranchos became increasingly difficult, and droughts severely reduced their productivity (Cleland 1941).

Imperial County

Imperial County was created on August 15, 1907, from the eastern half of San Diego County (O'Dell 1957:8). With an area of 4,087 square miles, the county abuts Mexico to the south, the Colorado

River and Arizona to the east, Riverside County to the north, and San Diego County to the west. Imperial County remained largely undeveloped with few settlers during the Spanish, Mexican, and American Periods until the waters of the Colorado River were diverted to this arid Colorado Desert area. With the availability of irrigation, the impetus for Imperial County development was agriculture.

Dr. O.M. Wozencraft first proposed plans for bringing water to the Imperial Valley in the late 1850s, but it was irrigation engineer Charles Robinson Rockwood whose 1892 survey and design for a single canal capable of irrigating about 2 million acres in the Imperial Valley and northern Baja California eventually succeeded (Hendricks 1971:2; O'Dell 1957:87). In 1896, Rockwood, A. H. Heber, and G. Chaffey formed the California Development Company. With financial backing, the company built a canal that directed water from the Colorado River at Yuma into Mexico and back into California (Hendricks 1971:6; O'Dell 1957:87–88).

On May 14, 1901, the canal delivered the first water to fields in the Calexico area. The successful California Development Company, planning for settlers, named the newly reclaimed desert area Imperial Valley (Bright 1998:70; Hendricks 1971:8). Agricultural pursuits proved to be very profitable within the first two decades after the start of irrigation. An influx of people with the ever-growing agricultural production also spurred growth of allied industries, including beekeeping and dairy and poultry farming. By 1905, the area had 80 miles of canals and 700 miles of distribution canals with an estimated 67,000 irrigated acres (City of El Centro 2006). Soon there were 12 water districts in the Imperial Valley that obtained most of their water from the Colorado River. Ten of these districts obtained water from the California Development Company.

The Imperial Land Company, a promotional associate of the water company, placed ads throughout the country to lure people to Imperial Valley (O'Dell 1957:88). Thousands of people arrived and settled in the area, and vast tracts of land were cleared for farming. In 1902, only a single school was present in the Imperial Valley. By 1914, there were five high schools and 41 elementary schools in the valley. In 1910, the population of Imperial County was 13,591; four years later it exceeded 50,000 (McGroarty 1914:30).

Several major floods occurred between 1904 and 1907 along the Colorado River. Breaches along the riverbank allowed the water to spill into Imperial Valley, caused by the high level of siltation in the river and main canals. Numerous attempts to stop the flooding failed until early 1907 when the river was diverted back to its natural course (O'Dell 1957:90). The series of floods left a large lake in the middle of the Salton Basin, covering an area 50 by 15 miles and encompassing 285,000 acres. This newly formed body of water was named the Salton Sea. In 1922, legislation was introduced requesting the construction of a dam at Boulder Canyon, which would prevent future large-scale flooding. Hoover Dam, at Black Canyon, was completed by 1936, and the All American Canal was constructed during the 1930s and completed in 1940 (El Centro Chamber of Commerce 2006).

Almost every type of vegetable, fruit, and other crops thrive in the Imperial Valley. Cotton was first grown and ginned in 1909, with 50,000 acres devoted to this crop by 1914 (McGroarty 1914:27). Alfalfa was a major crop in the Imperial Valley and although horses and mules were used for canal construction, hauling freight, and clearing land, production exceeded demand (Anderholt 1989:7). The development of daily farming in the valley was one result of it being too expensive to export the surplus alfalfa. Dairying soon became the "greatest industry in the development of the Imperial Valley"; by the late 1910s and early 1920s, there were about 2,000 dairies operating in the area at the same time (Anderholt 1989:53). Imperial County is also rich in mineral resources, including large deposits of fine clays, gypsum, and marble, among others (Morton 1977).

Holtville

The small city of Holtville is located approximately 10.4 km (6.5 miles) west of the project area. Founded in 1903 by W. F. Holton under the name of Holton, it was incorporated on June 20, 1908, as Holtville (City of Holtville 2020). Originally one of the largest dairy producers in the country, it was also a large agricultural hub for asparagus, okra, lettuce, spinach, and carrots, even being graced with the title of "Carrot Capital of the World" (Farr 1918). Importantly, W. F. Holton incorporated the Holton Power Company, with a power plant in Holtville, that powered Holtville, Imperial, Brawley, Calexico, and eventually El Centro (Burdette 1912). He later constructed a water-power plant in Holtville, established the Imperial Valley Gas Company, and constructed a railroad to connect Holtville to El Centro.

METHODS

The following section presents an overview of the methodology used to identify cultural resources within the project area.

CHRIS Records Search

On November 11, 2020, SWCA requested a confidential search of the CHRIS records at the SCIC, located on the campus of California State University, San Diego. The SCIC maintains records of previously documented cultural resources and technical studies; it also maintains copies of the OHP's portion of the Historic Resources Inventory. The search included any previously recorded archaeological resources (i.e., excluding historic buildings) within the project area and surrounding 0.8-km (0.5-mile) area. The purpose of the CHRIS records search is to identify whether any archaeological resources have been documented in the project area and assess the potential for undocumented resources to be present by comparison to adjacent areas. Confidential CHRIS results include specific information on the nature and location of sensitive archaeological sites, which should not be disclosed to the public or unauthorized persons and are exempt from the Freedom of Information Act. Appendix A includes a summary of previous studies conducted in the project area and records search radius, but site records and copies of reports have been excluded.

Archival Research

Concurrent with the confidential CHRIS records search, SWCA also reviewed property-specific historical and ethnographic documents to identify information relevant to the project area. Research focused on a variety of primary and secondary materials related to the history and development of the project area, including historical maps, aerial and ground photographs, ethnographic reports, and technical reports filed at the SCIC pertaining to the project area.

Native American Contact Program

On behalf of the client, SWCA contacted the NAHC requesting an SLF search for cultural resources in the project area. SWCA submitted the request to the NAHC via email on December 29, 2020. The NAHC responded to the request in a letter dated January 11, 2021, that was received via email.

Intensive Pedestrian Survey

SWCA Archaeologists Omar Rice, B.A.; William Kendig, B.A.; Yareli Lopez, B.A.; and Christina Peterson, M.A., conducted an intensive-level archaeological and built environment survey of the 604-acre project area between December 15 and December 20, 2020. The intensive-level survey consisted of systematic surface inspection of all areas with transects walked at 15-m intervals or less to ensure that any surface-exposed artifacts and sites could be identified. SWCA examined the ground surface for the presence of prehistoric artifacts (e.g., flaked stone tools, tool-making debris, or stone milling tools); historic-era artifacts (e.g., metal, glass, or ceramics); sediment discoloration that might indicate the presence of a cultural midden; roads and trails; and depressions and other features that might indicate the former presence of structures or buildings (e.g., post holes or foundations).

A reconnaissance-level survey was undertaken of any areas deemed inaccessible (e.g., steep slopes or private property); professional judgment was used to assess whether areas were safe for pedestrian survey. In areas that were inaccessible, the reconnaissance survey consisted of inspecting the area from a safe distance, looking for indications that cultural resources were present. The project area was photographed using a digital camera and resource data were recorded with a handheld tablet with a submeter-accurate global positioning system (GPS) antenna using the Collector for ArcGIS application. Newly identified resources were documented on appropriate California Department of Parks and Recreation Series 523 forms, and all previously recorded resources were updated. All site records will be filed with the SCIC. All field notes, photographs, and records related to the current study are on file at the SWCA Pasadena, California, office.

RESULTS

CHRIS Records Search

Previously Conducted Cultural Resource Studies

Results of the cultural resources records search at the SCIC indicate that 34 cultural resource studies have been conducted in and within 0.8 km (0.5 mile) of the project area (see Appendix A). Of these, 20 intersect some portion of the project area. Details of the reports are described below in Table 1.

Table 1. Previous Cultural Resources Studies in and within 0.5 mile of the Project Area

Report No.	Author / Affiliation	Year	Study Title	Relationship to Project Area
IM-00010	Ellis, Robert R., and Robert H Crabtree / Archaeological Research, Inc.	1974	Archaeological Impact Statement on East Mesa Areas 1 and 2, Imperial Valley, California	Within
IM-00011	Barker, Michael A. / Imperial Valley College Museum	1974	Preliminary Archaeological Assessment of the East Mesa, Imperial County, California	Within
IM-00053	Von Werlhof, Jay, and Sherilee Von Werlhof / Imperial Valley College Museum	1975	Archaeological Examinations of Certain Geothermal Test Well Sites in East Mesa Area, Imperial County, Report #2	Outside (within 0.5 mile)
IM-00098	Cupples, Sue Ann / Office Of Environmental Planning	1977	Archaeological Survey Report for a Proposed Material Site (Long)	Within
IM-00110	Von Werlhof, Jay, and Sherilee Von Werlhof / Imperial Valley College Museum	1977	Archaeological Examinations of Certain Geothermal Test Wells and Access Roads at East Mesa	Outside (within 0.5 mile)

Report No.	Author / Affiliation	Year	Study Title	Relationship to Project Area
IM-00112	Von Werlhof, Jay, and Sherilee Von Werlhof / Imperial Valley College Museum	1977	Archaeological Examination of Certain Test Bore Sites and Access Roads: East Mesa, Imperial County	Within
IM-00121	Swenson, James, and Don Lipp / UC Riverside Archaeological Research Unit	1977	Environmental Impact Evaluation: Assessment of Portions 0f East Mesa Geothermal Testing Area, Imperial County, California	Outside (within 0.5 mile)
IM-00142	Atlantis Scientific / Atlantis Scientific	1978	Draft Environmental Impact Report, Proposed 10 Mw Geothermal Power Plant, East Mesa Kgra Imperial County (Republic Geothermal, Inc.)	Within
IM-00144	Von Werlhof, Jay, and Sherilee Von Werlhof / Imperial Valley College Museum	1978	Archaeological Examinations of the Republic Geothermal Inc., Test Field	Within
IM-00147	Von Werlhof, Jay, and Sherilee Von Werlhof / Imperial Valley College Museum	1978	Archaeological Examinations of the Republic Geothermal Field, East Mesa	Outside (within 0.5 mile)
IM-00166	Pritchett, Lorraine / Imperial Valley College Museum	1978	Botanical Survey of Republic Geothermal Inc.'s Proposed 84 Mw Geothermal Generating Plant and Associated Field Development Operations	Outside (within 0.5 mile)
IM-00171	Von Werlhof, Jay, and Lorraine Pritchett / Imperial Valley College Museum	1979	Archaeological Examinations of the Sperry-Republic Geothermal Project, East Mesa	Outside (within 0.5 mile)
IM-00187	Eckhardt, William T. / Westec Services, Inc.	1979	Cultural Resource Inventory of Areas Affected by Reject Stream Replacement Projects	Within
IM-00189	Eckhardt, William / Westec Services, Inc.	1979	Cultural Resource Inventory of Areas Affected by Reject Stream Replacement Projects	Within
IM-00201	Von Werlhof, Jay, Karen Mcnitt, and Lorrain Pritchett / Imperial Valley College Museum	1979	Archaeological Examinations of the Republic Geothermal Field, East Mesa, Imperial County	Outside (within 0.5 mile)
IM-00203	Gallegos, Dennis / Westec Services, Inc.	1979	Class II Cultural Resource Inventory East Mesa and West Mesa Regions Imperial Valley, California, Volume I	Within
IM-00207	Davis, Emma Lou / Westec Services, Inc.	1980	Class II Cultural Resource Inventory East Mesa and West Mesa Regions Imperial Valley, California	Within
IM-00210	Von Werlhof, Jay, and Karen Mcnitt / Imperial Valley College Museum	1980	Archaeological Examinations of the Republic Geothermal Field, East Mesa, Imperial County	Within
IM-00224	Bureau of Land Management	1980	Draft Environmental Assessment Record East Mesa Non-Competitive Leases for Geothermal Exploration/Development	Within
IM-00240	Pritchett, Lorraine / Imperial Valley College Barker Museum	1981	Botanical Survey on Republic Geothermal, Inc. Leaseholds on East Mesa, Imperial County, Calif.	Outside (within 0.5 mile)
IM-00242	Von Werlhof, Jay / Imperial Valley College Barker Museum	1981	Archaeological Examinations of The Republic Geothermal, Inc., Study Area, East Mesa, Volume Viii	Outside (within 0.5 mile)
IM-00378	Schaefer, Jerry / Mooney-Levine And Associates	1987	The Ormesa - Iid Transmission Line and Ormesa Geothermal Pipeline Network Cultural Resources Survey and Testing Program, East Mesa, Imperial County, California	Within

Report No.	Author / Affiliation	Year	Study Title	Relationship to Project Area
IM-00383	Elling, C. Michael / Brian F. Mooney Associates	1987	An Intensive Archaeological Inventory in Sections 1, 4, 5, And 6 For the OrmesaIIi Geothermal Project, East Mesa, Imperial County, California	Within
IM-00388	Elling, C. Michael / Mooney-Levine And Associates	1987	An Intensive, Class III Cultural Resources Inventory for The Ormesa II Geothermal Project, East Mesa, Imperial County, California	Within
IM-00577	Gallegos, Dennis / Westec Services, Inc.	1986	Lake Cahuilla Prehistoric Occupation at Imp-4434 And Imp-5167, Imperial Valley, California	Outside (within 0.5 mile)
IM-00616	Von Werlhof, Jay / Imperial Valley College	1984	Archaeological Examinations for CBM Rancho Frontera Project, Calexico	Within
IM-00674	Bureau of Land Management	1994	Southern Arizona Transmission Project Preliminary Draft Environmental Impact Statement, Draft Environmental Impact Report, Draft Plan Amendment, DEIS/DEIR/DPA	Within
IM-00677	Dames & Moore / Dames & Moore	1993	Southern Arizona Transmission Project EIS/EIR, Cultural Resources Inventory Report, Draft	Within
IM-00682	Bureau of Land Management	1978	Cultural Resources Report for Republic Geothermal	Outside (within 0.5 mile)
IM-00718	York, Andrew L., and Tanya Wahoff / Kea Environmental	1999	Cultural Resources Survey Report for Proposed Geothermal Resource Pipelines 1 and 5, Ormesa Geothermal, Holtville, Imperial County, California	Outside (within 0.5 mile)
IM-01195	Imperial County Planning Department	2008	Procalamos Residential Subdivision Specific Plan (#07-0003) and Tentative Tract Map (Ttm #00972) - Assessor's Parcel Numbers 059-140-007-000, Et Al.	Outside (within 0.5 mile)
IM-01217	Mcginnis, Patrick, and Micahel Baksh / Tierra Environmental Services, Inc.	2006	Cultural Resource Survey for the Ormesa Geothermal Production Well 58-31 Project East Mesa, Imperial County, California	Outside (within 0.5 mile)
IM-01288	Ellis, Robert / Archaeological Research, Inc.	1973	Archaeological Impact Report on East Mesa - Area 1, Imperial Valley, California	Within
IM-01306	Wirth Associates, Inc / Wirth Associates, Inc	1980	Aps/SDG&E Interconnection Project Environmental Study Phase II Corridor Studies - Native American Cultural Resources Appendices	Within

Previously Recorded Cultural Resources

A total of 50 previously recorded cultural resources have been documented in and within a 0.8-km (0.5- mile) radius of the project area, three of which are located within the project area (P-13-008333, P- 13-003213, and P-13-000304). These sites are summarized in Table 2. P-13-008333 (CA-IMP-7835) is the East Highline Canal; P-13-003213 (CA-IMP-35H) is a historic wagon trail; and site P-13-000304 (CA-IMP-304) is as temporary prehistoric campsite, likely present at the high stand of Lake Cahuilla. Details of the sites are presented below.

Table 2. Previously Recorded Resources Within 0.5-mile of the Project Area.

Primary Number	Trinomial Number	Period	Resource Description	Recorded By, Affiliation	Year	Relationship to Project Area
P-13-000124	CA-IMP-000124	Prehistoric	Site composed of lithics, ceramics, and hearths	Malcolm Rogers	1930	Outside (Within 0.5-mile)
P-13-000280	CA-IMP-000280	Prehistoric	Site consisting of a temporary campsite with lithic scatter and ceramic scatter	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.; Ray Wilcox	1974; 1981	Outside (Within 0.5-mile)
P-13-000281	CA-IMP-000281	Prehistoric	Site consisting of a lithic scatter	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.	1974	Outside (Within 0.5-mile)
P-13-000283	CA-IMP-000283	Prehistoric	Site consisting of a temporary campsite and manufacturing area	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.	1974	Outside (Within 0.5-mile)
P-13-000284	CA-IMP-000284	Prehistoric	Site consisting of a temporary campsite and manufacturing area	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.	1974	Outside (Within 0.5-mile)
P-13-000285	CA-IMP-000285	Prehistoric, Historic	Multi-component site consisting of refuse scatter, lithic scatter, ceramic scatter, burials, and habitation debris	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.; Ed Collins, IVCM; J. Schaefer, Mooney-LeVine and Associates	1974; 1979; 1986	Outside (Within 0.5-mile)
P-13-000286	CA-IMP-000286	Prehistoric	Site consisting of habitation debris	Ellis, Crabtree, Arch. Research Inc.	1974	Outside (Within 0.5-mile)
P-13-000287	CA-IMP-000287	Prehistoric	Site consisting of a prehistoric campsite	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.	1974	Outside (Within 0.5-mile)
P-13-000288	CA-IMP-000288	Prehistoric	Site consisting of a campsite and process area	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.	1974	Outside (Within 0.5-mile)
P-13-000289	CA-IMP-000289	Prehistoric	Site consisting of a lithic scatter and campsite	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.	1974	Outside (Within 0.5-mile)
P-13-000290	CA-IMP-000290	Prehistoric	Site consisting of a lithic scatter and ceramic scatter	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.; Ed Collins	1974; 1981	Outside (Within 0.5-mile)
P-13-000292	CA-IMP-000292	Prehistoric	Site consisting of habitation debris, lithic scatter, ceramic scatter, and burials	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.; S. A. Cupples	1974; 1977	Outside (Within 0.5-mile)
P-13-000304	CA-IMP-000304	Prehistoric	Site consisting of a temporary campsite	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.	1974	Within
P-13-000306	CA-IMP-000306	Prehistoric	Site consisting of lithic scatter and ceramic scatter	Robert R. Ellis, Robert Crabtree, Arch. Research Inc.	1974	Outside (Within 0.5-mile)
P-13-002393	CA-IMP-002393		Isolate	Bill Nolta	Unknown	Outside (Within 0.5-mile)
P-13-002394	CA-IMP-002394		Isolate	Bill Nolta	Unknown	Outside (Within 0.5-mile)
P-13-002395	CA-IMP-002395		Isolate	Bill Nolta	Unknown	Outside (Within 0.5-mile)
P-13-002396	CA-IMP-002396		Isolate	Joe A. Vogel	Unknown	Outside (Within 0.5-mile)

Primary Number	Trinomial Number	Period	Resource Description	Recorded By, Affiliation	Year	Relationship to Project Area
P-13-002397	CA-IMP-002397		Isolate	Joe A. Vogel	Unknown	Outside (Within 0.5-mile)
P-13-002398	CA-IMP-002398		Isolate	Bill Nolta	Unknown	Outside (Within 0.5-mile)
P-13-002399	CA-IMP-002399		Isolate	Joe A. Vogel	Unknown	Outside (Within 0.5-mile)
P-13-002400	CA-IMP-002400		Isolate	Bill Nolta	Unknown	Outside (Within 0.5-mile)
P-13-002401	CA-IMP-002401		Isolate	Joe A. Vogel	Unknown	Outside (Within 0.5-mile)
P-13-002472	CA-IMP-002472		Isolate	Jay Von Werlhof	Unknown	Outside (Within 0.5-mile)
P-13-003071	CA-IMP-003071		Isolate	B. Hunter	2009	Outside (Within 0.5-mile)
P-13-003072	CA-IMP-003072		Isolate	W. McManus	2009	Outside (Within 0.5-mile)
P-13-003213	CA-IMP-003213		Isolate	W. McManus	2009	Within
P-13-003827	CA-IMP-003827		Isolate	Imperial Valley College Museum	2009	Outside (Within 0.5-mile)
P-13-003828	CA-IMP-003828		Isolate	Imperial Valley College Museum	2009	Outside (Within 0.5-mile)
P-13-003829	CA-IMP-003829		Isolate	Imperial Valley College Museum	2009	Outside (Within 0.5-mile)
P-13-003843	CA-IMP-003843		Isolate	Imperial Valley College Museum	2009	Outside (Within 0.5-mile)
P-13-003844	CA-IMP-003844		Isolate	Imperial Valley College Museum	2009	Outside (Within 0.5-mile)
P-13-003845	CA-IMP-003845		Isolate	Imperial Valley College Museum	2009	Outside (Within 0.5-mile)
P-13-004430	CA-IMP-004430		Isolate	Ed Collins	2009	Outside (Within 0.5-mile)
P-13-004431	CA-IMP-004431		Isolate	Ed Collins	2009	Outside (Within 0.5-mile)
P-13-004432	CA-IMP-004432		Isolate	Ed Collins	2009	Outside (Within 0.5-mile)
P-13-004435	CA-IMP-004435		Isolate	Ed Collins	2009	Outside (Within 0.5-mile)
P-13-004436	CA-IMP-004436		Isolate	Ed Collins	2009	Outside (Within 0.5-mile)
P-13-004451	CA-IMP-004451		Isolate	Ray Wilcox	2009	Outside (Within 0.5-mile)
P-13-004452	CA-IMP-004452		Isolate	Ray Wilcox	2009	Outside (Within 0.5-mile)
P-13-004457	CA-IMP-004457		Isolate	Ray Wilcox	2009	Outside (Within 0.5-mile)
P-13-004458	CA-IMP-004458		Isolate	Ray Wilcox	2009	Outside (Within 0.5-mile)
P-13-004459	CA-IMP-004459		Isolate	Ray Wilcox	2009	Outside (Within 0.5-mile)

Primary Number	Trinomial Number	Period	Resource Description	Recorded By, Affiliation	Year	Relationship to Project Area
P-13-004460	CA-IMP-004460		Isolate	Ray Wilcox	2009	Outside (Within 0.5-mile)
P-13-004465	CA-IMP-004465		Isolate	A. Noah	2009	Outside (Within 0.5-mile)
P-13-005167	CA-IMP-005167		Isolate	IVC Barker Museum	2009	Outside (Within 0.5-mile)
P-13-005490	CA-IMP-005490		Isolate	Brian F. Mooney Associates	2009	Outside (Within 0.5-mile)
P-13-006071	CA-IMP-006071		Isolate	ERC Environmental	2009	Outside (Within 0.5-mile)
P-13-008333	CA-IMP-007835	Historic	East Highline Canal	KEA Environmental, Inc.	2009	Within
P-13-011390	CA-IMP-010330		Isolate	Tierra Environmental Services	2010	Outside (Within 0.5-mile)

P-13-000304/CA-IMP-304

Site P-13-000304/CA-IMP-304 was recorded in 1974 by Robert R. Ellis and Robert Crabtree of Archaeological Research Inc., who described it as a prehistoric archaeological site representing a temporary campsite. This determination was made due to similar sites being found at similar elevations elsewhere in the region, which would have placed them adjacent to Lake Cahuilla during its highest stand. No further information or description is available for this resource. It is unknown whether the site has been previously evaluated for eligibility for the NRHP or CRHR.

P-13-003213/CA-IMP-3213

Site P-13-003213/CA-IMP-3213 was recorded in 2009 based on a reference in the General Land Office (GLO) . The site is a portion of a north-south-running wagon trail, presumably dating to the historic period. No further information or description is available for this resource, and its location on the ground, and whether it actually exists, does not appear to have been confirmed. Indeed, its location in the site record is identified by coordinates rather than a map, indicating uncertainty in its location. It is not known whether the site has been previously evaluated for eligibility for the NRHP or CRHR, but it seems unlikely.

P-13-008333/CA-IMP-7835

Site P-13-008333/CA-IMP-785, the East Highline Canal, was first recorded by KEA Environmental, Inc., in 1998, and was described as a dirt irrigation canal segment that had been recently lined with cement segments. It was revisited by HDR Engineering in 2000, by EDAW Inc. in 2005 and 2008, and by the Chambers Group in 2012, before being last updated in 2016 by ASM Affiliates.

Built prior to 1914, the East Highline Canal was part of the All American Canal System (CA-IMP-7130H), an extensive system of irrigation canals that opened in 1940. The site is a linear canal feature that runs from the Alamo River to Niland and varies between 42 and 105 feet in width. It is contained within earthen berms, and while originally the entire length was earthen, several portions have been lined with concrete during the past century. This resource, and associated segments, has been previously recommended eligible for the NRHP and CRHR under Criteria A/1 and C/3 with a status code of 3D, indicating that it appears eligible as a contributing element of a CRHR-eligible district, based on survey evaluation.

Intensive Pedestrian Survey

Conducted between December 15 and 20, 2020, the intensive-level archaeological and built environment survey covered the full project area (Figure 4) with the exception of a small portion of private land that was determined unsafe to survey due to aggressive dogs, and two separate portions of land that were plastic-lined reservoirs. In all three locations reconnaissance survey techniques were used. Visibility over the whole project area varied between poor (0%–25%) and great (51%–75%) (Figure 5 through Figure 8). The project area consisted primarily of flat open space. Sediments were a light brown coarse silty sand formed from alluvial deposits. Vegetation consisted of shrubs and seasonal grasses and forbs consistent with East Mesa-Yuha Desert habitat, including creosote, bursage, and saltbush. In addition, large parts of the project area consisted of agricultural fields. One previously recorded archaeological site (P-13-008333/CA-IMP-785) was re-located, and one new historic-era isolate and five new historic-era archaeological sites were identified and recorded. These are described below. Two previously recorded sites (P-13-003213/CA-IMP-003213 and P-13-000304/CA-IMP-000304) were not re-located during the survey.

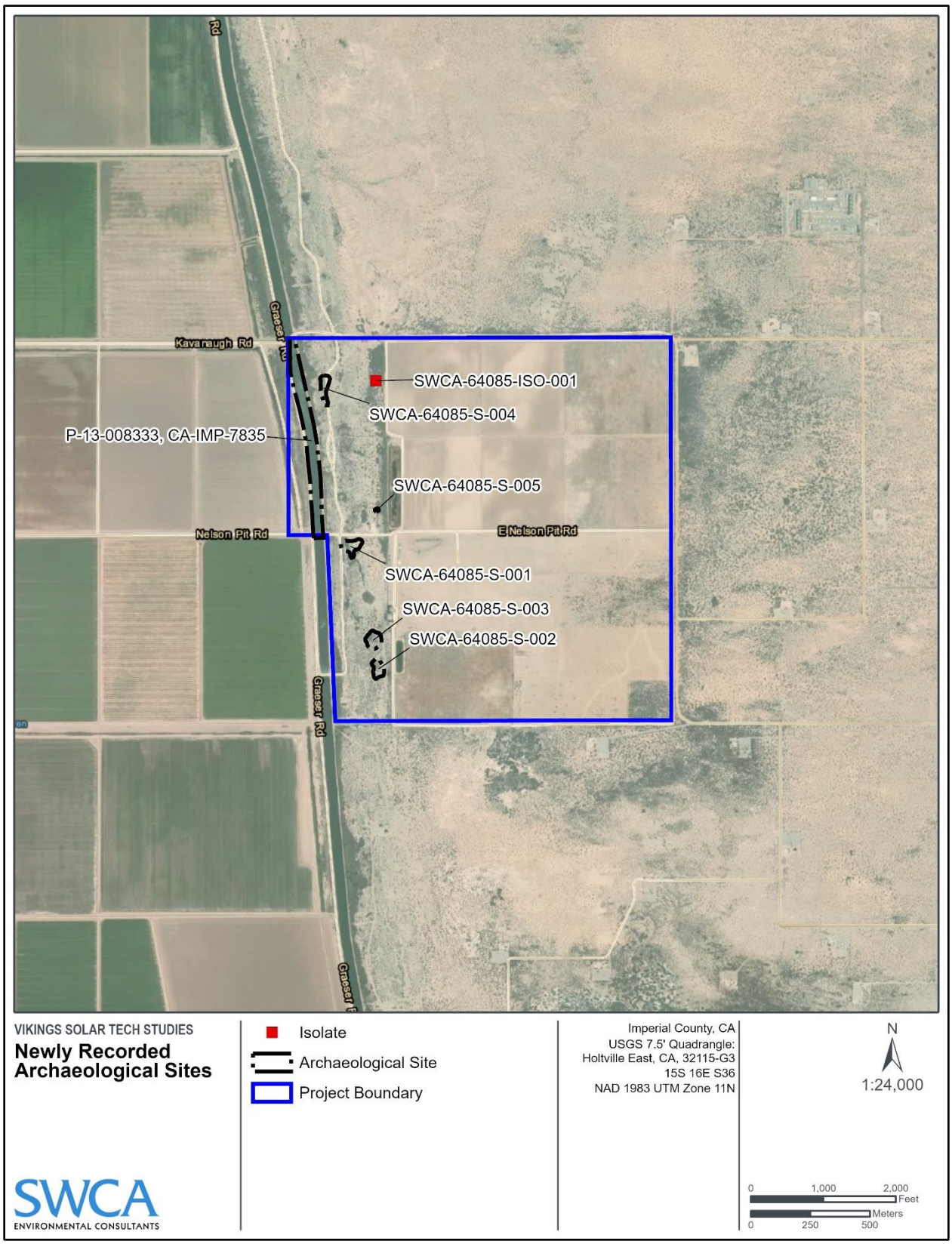

Figure 4. Results Map (Confidential)

Figure 5. Overview of project area, view to the northwest, 12/16/2020.

Figure 6. Overview of project area, view to the north, 12/17/2020.

Figure 7. Overview of project area, view to the south, 12/20/2020.

Figure 8. Overview of project area, view to the north, 12/20/2020.

Newly Documented Resources

SWCA identified five historic-era archaeological sites and one historic-era isolate. Each is described below, followed by an evaluation of each sites' eligibility for the CRHR.

SWCA-64085-S-001

SWCA-64085-S-001 was recorded on December 15, 2020, by SWCA archaeologists as a historic-era refuse scatter consisting mainly of cans and glass bottle fragments, with modern refuse throughout the site. The site contains two features, Features 1001 and 1002, which are both refuse concentrations. Located 250 feet east of East Highline Canal and 2.5 miles north of Interstate 8 (I-8), just east of Date City within Imperial Country, the site measures 290 feet (E-W) × 229 feet (N-S). It is on an alluvial plain with an open aspect. Sediments are pink (Munsell 7.5YR 7/3) silty sandy loam with subrounded granitic clasts. Visibility is fair (26%–50%) with vegetation consisting primarily of creosote bush, saltbush, and fiddleneck.

Feature 1001 consists of a discrete historic-era refuse concentration composed primarily of cans and bottles (Figure 9). In total, 94 cans were documented, including church-key opened cans, food cans, rotary-opened food cans, tear-tab food cans, and sanitary cans. Glass artifacts include more than 100 glass fragments which are primarily colorless glass, but include green and amber glass as well. Also recorded were two glass bottle bases with maker's marks: one from the Brockway Glass Company manufactured between 1933 and 1996, and the other from the Madera Glass Company manufactured between 1971 and 2000.

Feature 1002 consists of a discrete historic-era refuse concentration near the center of the site and is composed primarily of cans and bottles, with some miscellaneous metal objects and ceramics also present (Figure 10). Ceramics include Fiestaware cups and plate fragments, and ironstone. Various metal objects include barbed wire, metal fragments, and wire. In total, 42 cans were recorded, consisting of tobacco tins, sanitary cans, and fuel cans. Glass artifacts include more than 120 glass fragments which are primarily colorless and amber glass, but also include cobalt, aqua, green, and milk glass. Also recorded were six glass bottle bases: one with a W.J. Latchford Glass Company maker's mark dating to between 1957 and 1989; one with a Latchford-Marble Glass Company maker's mark dating to between 1939 and 1957; one with a Obear-Nestor Glass Company maker's mark dating between to 1915 and 1978; one with a 1942 Owens-Illinois Glass Company maker's mark; one with a 1943 Owens-Illinois Glass Company maker mark; and one with a Hazel-Atlas Glass Company maker's mark dating to between 1923 and 1982.

The site and its refuse scatter are a product of multiple dumping episodes and may be associated with the nearby ranch house located approximately 820 feet southeast of the site and outside the project area. Based on overlap in manufacturing dates, artifacts provide a most likely age range of the late 1950s to late 1960s, while modern refuse across the site dates from the late 1970s to early 2000s, both within and outside the site boundary.

Figure 9. Overview of WCA-64085-S-001, Feature 1001, view to the north 12/15/2020.

Figure 10. Overview of SWCA-64085-S-001, Feature 1002, view to the west 12/15/2020.

CRHR Eligibility Recommendation

SWCA recommends this resource ineligible for the CRHR under Criterion 1, as it is not associated with local or regional history or the cultural heritage of California or the United States. As a historic-era refuse scatter consisting mainly of cans and glass bottle fragments and lacking significant historic features or intra-site patterning, this site cannot be reasonably associated with events in history. The refuse scatter likely is the result of episodic dumping next to the road, and does not provide any additional data. SWCA recommends SWCA-64085-S-001 ineligible for the CRHR under Criterion 2, as is not associated with the lives of persons important to local, California, or national history; as a roadside refuse deposit consisting of multiple dumping episodes spanning several decades, and mixed with modern trash, the refuse scatter cannot be linked to specific people. SWCA recommends this resource ineligible for the CRHR under Criterion 3, as it does not embody distinctive characteristics of a type, period, region, or method of construction, does not represent the work of a master, and does not possess high artistic values; rather, it is an unstructured refuse deposit. The site is a surficial can scatter and the current recordation has captured the information value of this resource. In addition, according to field observations of the ground surface and the context of the artifacts, the potential for subsurface deposits is low in this location. As such, the site is not likely to yield additional information important to the history of the local area, California, or the nation. Therefore, SWCA recommends SWCA-64085-S-001 ineligible for the CRHR under Criterion 4.

Site SWCA-64085-S-001 is recommended ineligible for the CRHR under any criteria. Furthermore, SWCA recommends that the site does not meet the criteria for a "unique archaeological resource" for the purposes of CEQA.

SWCA-64085-S-002

SWCA-64085-S-002 was recorded on December 15, 2020, by SWCA archaeologists as a historic-era refuse scatter consisting mainly of cans and glass bottle fragments, with modern refuse scattered throughout the site (Figure 11). The site contains two features, Features 1013 and 1014, both of which are refuse concentrations. Located 700 feet east of East Highline Canal and 2.3 miles north of I-8, just east of Date City within Imperial Country, the site measures 275 feet (N-S) × 150 feet (E-W). It is on an alluvial plain with an open aspect, and sediments are pink (Munsell 7.5YR 7/3) silty sandy loam with subrounded granitic clasts. Visibility is fair (26%–50%) with vegetation consisting primarily of creosote bush, saltbush, and fiddleneck.

Feature 1013 consists of a large historic-era refuse concentration, primarily composed of cans and glass bottle fragments. Due to the size and artifact density of the feature, a smaller area within the larger feature was selected to serve as a representative sample (PD 1015). PD 1015 measured 3 m (E-W) × 2 m (N-S). In total, 125 cans were recorded within the sample, consisting of sardine cans, paint cans, rotary-opened food cans, church key–opened beverage cans, bimetal beverage cans, aerosol cans, and spice tins. More than 200 glass artifacts were recorded in the sample, primarily colorless glass fragments but also amber, green, and milk glass fragments, as well as complete colorless and amber glass bottles. Six maker's marks on bottle bases were identified: three with Owens-Illinois Glass Company maker's marks manufactured since 1954; one with a Latchford Glass Company maker's mark manufactured between 1930 and 1989; and one with a Thatcher Manufacturing Company maker's marks manufactured between 1944 and 1985.

Feature 1014 consists of a discrete historic-era refuse concentration composed primarily of cans and bottles (Figure 12). Due to the size and density of the feature, an area was delineated to serve as a representative sample (PD 1016). PD 1016 measured 1 m (E-W) × 1 m (N-S) and contained a total of 28 cans, consisting of church key–opened beverage cans, sanitary cans, an oil filter, and a spice tin.

Nineteen glass artifacts were recorded within the sample, including colorless glass bottle fragments, milk glass bottle fragments, and a complete colorless glass bottle with a Kerr Glass Manufacturing Company maker's mark dating between 1969 and 1996.

This site and its refuse scatter are likely a product of multiple dumping episodes, possibly from the nearby ranch house located approximately 5,220 feet northeast of site and outside the project area. Based on overlap in manufacturing dates, artifacts provide a most likely age range for the site of the late 1930s to late 1960s, while modern refuse across the site dates from the late 1970s to early 2000s, within and outside the site boundary.

CRHR Eligibility Recommendation

SWCA recommends this resource ineligible for the CRHR under Criterion 1, as it is not associated with local or regional history or the cultural heritage of California or the United States. As a historic-era refuse scatter consisting mainly of cans and glass bottle fragments and lacking significant historic features or intra-site patterning this site cannot be reasonably associated with events in history. The refuse scatter likely is the result of episodic dumping next to the road, and does not provide any additional data. SWCA recommends SWCA-64085-S-002 ineligible for the CRHR under Criterion 2, as is not associated with the lives of persons important to local, California, or national history; as a roadside refuse deposit consisting of multiple dumping episodes spanning several decades, and mixed with modern trash, the refuse scatter cannot be linked to specific people. SWCA recommends this resource ineligible for the CRHR under Criterion 3, as it does not embody distinctive characteristics of a type, period, region, or method of construction, does not represent the work of a master, and does not possess high artistic values; rather, it is a refuse deposit lacking in meaningful features or structure. The site is a surficial can scatter and the current recordation has captured the information value of this resource. In addition, according to field observations of the ground surface and the context of the artifacts, the potential for subsurface deposits is low in this location. As such, the site is not likely to yield additional information important to the history of the local area, California, or the nation. Therefore, SWCA recommends SWCA-64085-S-002 ineligible for the CRHR under Criterion 4.

Site SWCA-64085-S-002 is recommended ineligible for the CRHR under any criteria. Furthermore, SWCA recommends that the site does not meet the criteria for a "unique archaeological resource" for the purposes of CEQA.

Figure 11. Overview of SWCA-64085-S-002, view to the northwest.

Figure 12. Overview of SWCA-64085-S-002, sample unit PD 1016, view to the north-northwest.

SWCA-64085-S-003

SWCA-64085-S-003 was recorded on December 16, 2020, by SWCA archaeologists as a historic-era refuse scatter consisting mainly of cans and glass bottle fragments, with modern refuse noted throughout the site (Figure 13). The site contains two features, Features 1024 and 1027, both of which are refuse

concentrations. The site is located 600 feet east of East Highline Canal and 2.3 miles north of I-8, just east of Date City within Imperial Country, measuring 260 feet (N-S) × 220 feet (E-W). It is on an alluvial plain with an open aspect. Sediments are pink (Munsell 7.5YR 7/3) silty sandy loam with subrounded granitic clasts. Visibility is fair (26%–50%), with vegetation consisting primarily of creosote bush, saltbush, and fiddleneck.

Feature 1024 consists of a large historic refuse concentration, composed primarily of cans and bottles. Due to the size and artifact density of the feature, two 1 × 1–m areas within the larger feature were selected as a representative sample (PDs 1025 and 1026). PD 1025 contained 97 cans, consisting of beverage cans, fruit cans, and paint cans (Figure 14). Also recorded was a single orange juice bottle with a Ball Brothers Glass Manufacturing Company maker's mark manufactured between 1933 and 1936, along with plastic buttons, rubber hose fragments, construction debris, and miscellaneous metal fragments. PD 1026 contained 68 cans, consisting of pull-tab bimetal beverage cans, milk cans, and rotary-opened fruit cans. Also recorded were glass cup fragments, partial bottles, and bottle fragments. Of these glass artifacts, four maker's marks were identified on bottle bases: one E. & J. Gallo maker's mark manufactured from 1958 to the present; one amber glass bottle with an Owens-Illinois Glass Company maker's mark manufactured beginning in 1954; and a clear flask bottle with a Fairmont Glass Works maker's mark manufactured between 1933 and 1968.

Feature 1027 consists of a discrete historic-era refuse concentration, composed primarily of cans and bottles. Due to the size and density of the feature, a 1m by 1m area was delineated as a representative sample (PD 1028). More than 75 cans were recorded within the sample, consisting primarily of bimetal pull tab beverage cans, but also including fruit cans, milk cans, and meat tins. Nine complete bottle bases were also recorded, all of colorless or amber glass, with three having identifiable maker's marks: one amber glass bottle with an Owens-Illinois Glass Company maker's mark manufactured beginning in 1954; one colorless glass bottle base with a Latchford Glass Company maker's mark manufactured between 1957 and 1989; and one amber glass bottle base with a Northwestern Glass Company maker's mark manufactured between 1931 and 1987. Other artifacts recorded include construction debris, oil filters, and miscellaneous metal fragments.

The refuse scatter is likely a product of multiple dumping episodes, possibly from the nearby ranch house located 275 feet northeast of site and outside the project area. The likely date range for the site is the late 1950s to late 1960s, although there is evidence of modern agricultural and household refuse dating to the late 1970s to early 2000s within and outside the site boundary.

Figure 13. Overview of SWCA-64085-S-003, view to the south.

Figure 14. Overview of SWCA-64085-S-003, sample unit PD 1025, view to the southwest.

CRHR Eligibility Recommendation

SWCA-64085-S-003 was recorded on December 16, 2020, by SWCA archaeologists as a historic-era refuse scatter consisting mainly of cans and glass bottle fragments, with modern refuse throughout the site. SWCA recommends this resource ineligible for the CRHR under Criterion 1, as it is not associated with local or regional history or the cultural heritage of California or the United States. As a historic-era refuse scatter consisting mainly of cans and glass fragments and lacking historic features or intra-site patterning, this site cannot be reasonably associated with events in history. While the site contains a large amount of refuse and is possibly linked in a general way to a ranch house nearby (episodic refuse dumping), the association is uncertain, and the refuse scatter does not provide any additional data beyond what was recorded during the survey. SWCA recommends SWCA-64085-S-003 ineligible for the CRHR under Criterion 2, as it is not associated with the lives of persons important to local, California, or national history; as a roadside refuse deposit consisting of multiple dumping episodes spanning several decades, and mixed with modern trash, the refuse scatter cannot be linked to specific people. SWCA recommends this resource ineligible for the CRHR under Criterion 3, as it does not embody distinctive characteristics of a type, period, region, or method of construction, does not represent the work of a master, and does not possess high artistic values; rather, it is an unstructured refuse deposit. The site is a surficial can scatter and the current recordation has captured the information value of this resource. In addition, according to field observations of the ground surface and the context of the artifacts, the potential for subsurface deposits is low in this location. As such, the site is not likely to yield additional information important to the history of the local area, California, or the nation. Therefore, SWCA recommends SWCA-64085-S-003 ineligible for the CRHR under Criterion 4.

Site SWCA-64085-S-003 is recommended ineligible for the CRHR under any criteria. Furthermore, SWCA recommends that the site does not meet the criteria for a "unique archaeological resource" for the purposes of CEQA.

SWCA-64085-S-004

SWCA-64085-S-004 was recorded on December 17, 2020, by SWCA archaeologists as a historic-era refuse scatter consisting mainly of cans and glass bottle fragments with modern refuse noted throughout the site (Figure 15). The site contains one feature, Feature 1043, which is a refuse concentration. The site is located 200 feet east of East Highline Canal and 2.4 miles north of I-8, just east of Date City within Imperial Country. It measures 410 feet (N-S) × 120 feet (E-W) and is on an alluvial plain with an open aspect. Sediments are pink (Munsell 7.5YR 7/3) silty sandy loam with subrounded granitic clasts. Visibility is fair (26%–50%), with vegetation consisting primarily of creosote bush, saltbush, and fiddleneck.

Feature 1043 consists of a large domestic refuse concentration (Figure 16). Due to the size and artifact density of the feature, a 1 m by 1m area within the larger feature was selected as a representative sample (PD 1044). Materials observed within the sample include more than 150 rotary-opened sanitary meat cans, more than 20 large church key–opened sanitary juice cans, more than 50 rotary-opened food cans, four aerosol cans, and three bimetal pull-tab beverage cans. Glass artifacts included six external thread finish condiment bottles, two perfume bottles with spray tops, and six food jars. Nine complete glass bottles with maker's marks were identified: one colorless glass bottle with a Ball Brothers Glass Manufacturing Company maker's mark manufactured between 1933 and 1936; one colorless flask bottle with a Ball Brothers Glass Manufacturing Company maker's mark manufactured between 1933 and 1936; four bottles (three colorless and one green) with Owens-Illinois Glass Company maker's marks manufactured beginning in 1954; one colorless bottle with a Pierce Glass Company maker's mark manufactured between 1905 and 1987; one colorless glass bottle with a Glass Containers Corporation maker's mark manufactured between 1967 and 1987; and a cobalt blue Noxzema bottle first sold in 1914.

Additional materials observed within the sample area include five fragments of cut mammal bones (likely cow), aluminum foil fragments, four aluminum food trays, a colorless decorative glass stem, a plastic hypodermic cap, miscellaneous plastic fragments, a plastic lipstick case, a plastic detergent bottle, and three aluminum pull-tab beer cans.

The site and refuse scatter is likely a product of multiple dumping episodes, possibly from the nearby ranch house located 275 feet northeast of site and outside the project area. The site likely dates from the early 1900s to the late 1960s, though there is evidence of modern agricultural and household refuse that dates from the late 1970s to the early 2000s, both within and outside the site boundary. The presence of modern materials intermixed within the site and within the feature indicate continued use as a dump to the present day.

Figure 15. Overview of SWCA-64085-S-004, view to the north.

Figure 16. Overview of SWCA-64085-S-004, sample unit PD 1044, view to the northeast.

CRHR Eligibility Recommendation

SWCA-64085-S-004 was recorded on December 16, 2020, by SWCA archaeologists as a historic-era refuse scatter consisting mainly of cans and glass bottle fragments, with modern refuse intermixed throughout the site. SWCA recommends this resource ineligible for the CRHR under Criterion 1, as it is not associated with local or regional history, or the cultural heritage of California or the United States. As a historic-era refuse scatter consisting of more than 200 cans and at least 18 glass bottle fragments that lacks historic features or intra-site patterning, the site cannot be reasonably associated with events in history. While the site is possibly linked in a general way to a nearby ranch house through episodic refuse dumping, the association is uncertain, and the refuse scatter does not provide any additional data beyond what was recorded during the survey. SWCA recommends SWCA-64085-S-004 ineligible for the CRHR under Criterion 2, as it is not associated with the lives of persons important to local, California, or national history; as a roadside refuse deposit consisting of multiple dumping episodes spanning several decades, and mixed with modern trash, the refuse scatter cannot be linked to specific people. SWCA recommends this resource ineligible for the CRHR under Criterion 3, as it does not embody distinctive characteristics of a type, period, region, or method of construction, does not represent the work of a master, and does not possess high artistic values; rather, it is an unstructured refuse deposit. The site is a surficial can scatter and the current recordation has captured the information value of this resource. According to field observations of the ground surface and the context of the artifacts, the potential for subsurface deposits is low in this location. As such, the site is not likely to yield additional information important to the history of the local area, California, or the nation. Therefore, SWCA recommends SWCA-64085-S-004 ineligible for the CRHR under Criterion 4.

Site SWCA-64085-S-004 is recommended ineligible for the CRHR under any criteria. Furthermore, SWCA recommends that the site does not meet the criteria for a “unique archaeological resource” for the purposes of CEQA.

SWCA-64085-S-005

SWCA-64085-S-005 was recorded on December 17, 2020, by SWCA as a historic-era refuse scatter consisting primarily of cans and glass bottle fragments (Figure 17). The site is located 750 feet east of East Highline Canal, 200 feet west of an agricultural field, and 2.6 miles north of I-8, just east of Date City within Imperial Country. It measures 50 feet (E-W) × 36 feet (N-S). It is on an alluvial plain with an open aspect. Sediments are pink (Munsell 7.5YR 7/3) silty sandy loam with subrounded granitic clasts. Visibility is good (51%–75%) with vegetation consisting primarily of creosote bush, saltbush, and fiddleneck.

Recorded artifacts include 76 cans consisting of bimetal pull-tab beverage cans, rotary-opened fruit cans, meat tins, paint cans, and rotary-opened other food cans. Also recorded were 17 colorless and amber glass bottle fragments. In addition, four bottle base fragments with maker's marks were recorded: one colorless and one amber bottle base fragment, both with Owens-Illinois Glass Company maker's marks manufactured beginning in 1954; one colorless glass bottle base fragment with a Latchford Glass Company maker's mark manufactured between 1957 and 1989; and one colorless glass bottle base with a Thatcher Manufacturing Company maker's mark manufactured between 1944 and 1985.

This refuse scatter dates to the mid-1940s at the earliest, and appears to be the result of a single dumping episode associated with the agricultural use of the area.

Figure 17. Overview of SWCA-64085-S-005, view to the north.

CRHR Eligibility Recommendation

SWCA-64085-S-005 was recorded on December 16, 2020, by SWCA archaeologists as a historic-era refuse scatter consisting of mainly cans and glass bottle fragments. SWCA recommends this resource ineligible for the CRHR under Criterion 1, as it is not associated with local or regional history or the cultural heritage of California or the United States. As a historic-era refuse scatter consisting of more than

75 cans and more than 20 glass bottle fragments that lacks historic features or intra-site patterning, the site cannot be reasonably associated with events in history. SWCA recommends SWCA-64085-S-005 ineligible for the CRHR under Criterion 2, as it is not associated with the lives of persons important to local, California, or national history; as a roadside refuse deposit, the refuse scatter cannot be linked to specific people. As a historic-era refuse scatter, SWCA recommends this resource ineligible for the CRHR under Criterion 3, as it does not embody distinctive characteristics of a type, period, region, or method of construction, does not represent the work of a master, and does not possess high artistic values; rather, it is an unstructured refuse deposit. The historic-era deposit is a surficial can and glass scatter, and the current recording has captured its information value. The site is a surficial can scatter and the current recordation has captured the information value of this resource. According to field observations of the ground surface and the context of the artifacts, the potential for subsurface deposits is low in this location and the refuse scatter does not provide any additional data beyond what was recorded during the survey. As such, the site is not likely to yield additional information important to the history of the local area, California, or the nation. Therefore, SWCA recommends SWCA-64085-S-005 ineligible for the CRHR under Criterion 4.

Site SWCA-64085-S-005 is recommended ineligible for the CRHR under any criteria. Furthermore, SWCA recommends that the site does not meet the criteria for a "unique archaeological resource" for the purposes of CEQA.

SWCA-64085-ISO-001

Historic-era isolate SWCA-64085-ISO-001 was recorded on December 16, 2020, by SWCA archaeologists. This isolate consists of two church key–opened cans, one with a crimped lap seam measuring 4-12/16 inches high by 2-10/16 inches in diameter, and one with an interlocking seam measuring 4-12/16 inches high by 2-10/16 inches in diameter. Located 288 m east of the East Highline Canal, it is on an alluvial plain with an open aspect. Sediments are pink (Munsell 7.5YR 7/3) silty sandy loam with subrounded granitic clasts (Figure 18). Visibility is poor (0%–25%) with vegetation consisting primarily of creosote bush.

CRHR Eligibility Recommendation

Given their lack of context and association, isolates are categorically considered ineligible for the CRHR.

Figure 18. Overview of SWCA-64085-ISO-001, view to the east.

Previously Documented Resources

SWCA re-located one previously recorded historic-era site, described below. The two previously recorded resources that were not re-located are also discussed below.

P-13-000304/CA-IMP-304

Site P-13-000304/CA-IMP-304 is a prehistoric archaeological site, described as a temporary campsite, recorded in 1974 by Robert R. Ellis and Robert Crabtree of Archaeological Research Inc. This determination was made due to similar sites being found at similar elevations elsewhere in the region, which would have placed them adjacent to Lake Cahuilla during its highest stand. Otherwise, no information is provided regarding the size or archaeological contents of the site. SWCA revisited the mapped location for this site on December 18, 2020. The site was not found and it likely that the site was destroyed during the project area's past use for agricultural purposes. While the presence of subsurface deposits could not be verified, it seems unlikely given the degree of disturbance from past agricultural use, and the older age of the underlying geologic sediments

CRHR Eligibility Recommendation

The resource appears to have been destroyed and was not evaluated for the CRHR.

P-13-003213/CA-IMP-3213

P-13-003213/CA-IMP-3213 was recorded in 2009 based on the GLO Survey Notes of R. C. Matthewson (1856). The resource is a portion of a north-south-running wagon trail. SWCA revisited the mapped location for this site on December 18, 2020. The site was not found. Considering the surficial nature of this type of resource it is likely that the site was destroyed during the project area's past use for

agriculture. It may also be the case that its location, taken as it was from notes over 150 years old, has not been precisely plotted and so does not occur within the project area.

CRHR Eligibility Recommendation

The resource appears to no longer exist or is incorrectly plotted within the project area. It was not evaluated for the CRHR.

P-13-008333/CA-IMP-7835

P-13-008333/CA-IMP-7835, the East Highline Canal, was first recorded by KEA Environmental, Inc., in 1998 as a dirt irrigation canal segment that had been recently lined with cement segments. It was revisited in 2000 by HDR Engineering, by EDAW Inc. in 2005 and 2008, by Chambers Group in 2012, before being last updated in 2016 by ASM Affiliates. SWCA revisited a segment of the East Highline Canal that crosses through project area. The segment of the canal is 0.5 mile long, 130 feet wide, and 7 feet deep and contains one structure, an all-wood bridge (PD 1059) for Nelson Pit Road. The canal runs north-south along the western edge of the northern half of the project site and the bridge is located at the southern end of the portion within the project area.

This half-mile segment documented in the project area is a concrete-lined earthen canal and is used as the primary source of water for irrigation in the region. SWCA identified no changes to the canal itself from previous recordings, but updated the site with a description of the Nelson Pit Road bridge as part of the site (Figure 19 and Figure 20). The bridge crosses the canal and is used primarily as an access road for a nearby agricultural field and is associated with the establishment of the agricultural fields in the 1950s. The bridge is composed of 12-inch-diameter beams used as the main footings along with wood beams of 12 inches wide, 12 inches thick, and 16 feet long, and 6 to 8 inches wide, 4 inches thick, and 20 feet long (Figure 21). Asphalt has been added to the top of the bridge, likely when Nelson Pit Road was repaved.

CRHR Eligibility Recommendation

P-13-008333/CA-IMP-7835 has been previously recommended eligible for the NRHP and CRHR under Criteria A/1 and C/3, with a status code of 3D, indicating that it appears eligible as a contributing element of a CRHR-eligible district, based on survey evaluation.

Figure 19. Overview of P-13/008333/CA-IMP-7835, view to the north.

Figure 20. Overview of East Highline Canal, view to the west.

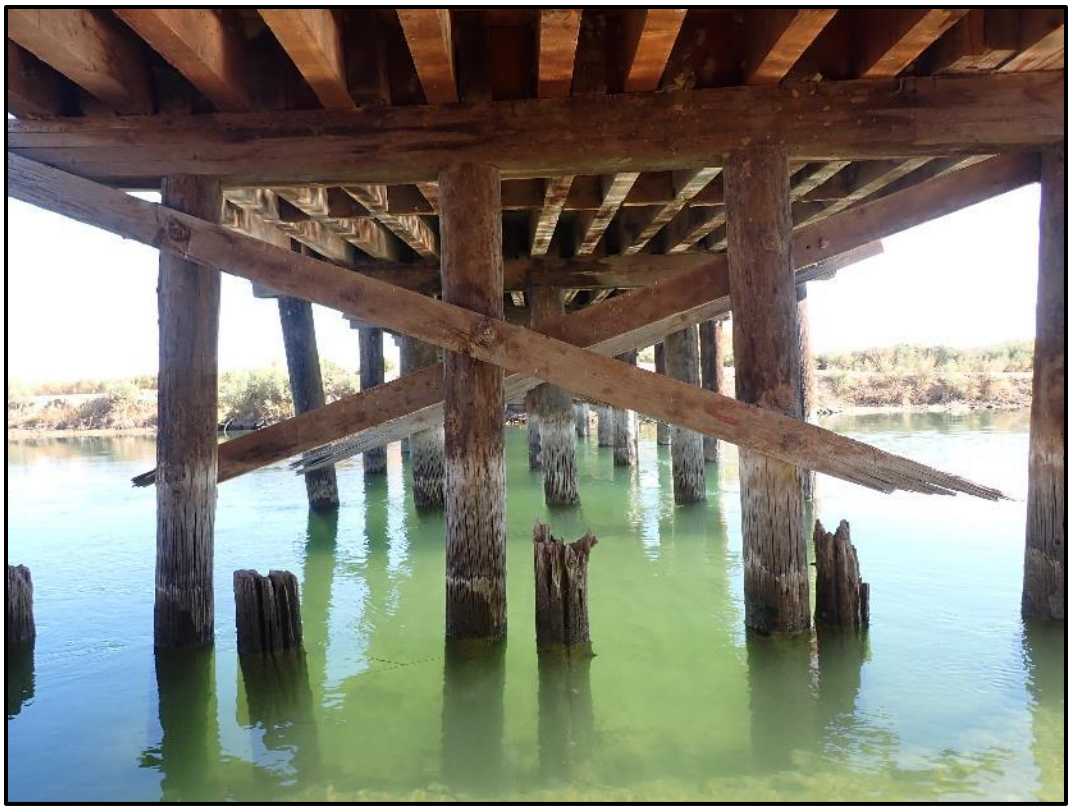

Figure 21. Detail of bridge construction, view to the west.

SUMMARY AND RECOMMENDATIONS

The goal of this study was to identify archaeological resources that could be affected by ground-disturbing activities associated with the proposed Viking Solar Energy Storage project. A record search conducted by the SCIC identified 50 previously recorded resources in and within a 0.8-km (0.5-mile) radius of the project area. Of these 50 resources, three are mapped within the project area itself. The search of the SLF maintained by the NAHC was negative within the project area. The NAHC noted that negative results may not indicate the absence of Native American cultural resources in the area and provided a contact list of 16 Native American tribal organizations that may have knowledge of cultural resources in or near the study area. The County, as lead agency, will conduct its own Native American consultation for the project, as part of its AB 52 responsibilities.

SWCA staff conducted an intensive-level pedestrian survey of the project area. As part of the fieldwork, SWCA archaeologists revisited the locations of the three previously recorded resources but were unable to find two of them (P-13-000304/CA-IMP-304 and P-13-003213/CA-INY-3213). Both are presumed either misplotted or destroyed. As a consequence, the two resources will not be impacted by the project.

The third previously recorded resource (P-13-008333/CA-INY-7835) is the East Highline Canal, which has been previously recommended eligible for the CRHR. It therefore qualifies as a historical resource under CEQA, and any adverse impacts to the resources could constitute a significant impact on the environment. This resource will be left in place and avoided and as a consequence will not be impacted by the project.

SWCA archaeologists also documented six new archaeological resources: five historic-era refuse scatters (SWCA-64085-S-001 through SWCA-64085-S-005) and one historic-era isolate (SWCA-64085-ISO-001). SWCA evaluated each of these newly recorded resources for CRHR eligibility, based on surface indicators, and none of the newly identified resources are recommended eligible for the CRHR under any criteria. Since the resources are not considered historical resources for the purposes of CEQA, they need not be considered further.

As a result of this assessment, SWCA concludes that the project as proposed will not have a significant impact on cultural resources. However, there is always a possibility that currently unknown resources could be identified during ground-disturbing activities. In the event that previously unidentified resources are exposed during ground disturbance, work in the immediate vicinity of the find must stop until a qualified archaeologist can evaluate the significance of the find according to the CRHR. Ground-disturbing activities may continue in other areas. If the discovery proves significant under CEQA (Section 15064.5f; PRC 21082) and cannot be avoided by the project, additional work such as archaeological and Native American monitoring, archaeological testing, or data recovery excavation may be warranted. Should any prehistoric or historic-era Native American artifacts be encountered, additional consultation with NAHC-listed Native American tribal groups should be conducted immediately.

The discovery of human remains is always a possibility during ground disturbance; Section 7050.5 of the State of California Health and Safety Code states that no further disturbance shall occur until the Imperial County Coroner has made a determination of origin and disposition of the remains pursuant to PRC 5097.98. The Imperial County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric, the Coroner will notify the NAHC, which will determine and notify an MLD. The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

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APPENDIX A
California Department of Parks and Recreation Forms (Confidential)

Phase I ESA Report

Proposed Vikings Solar Project
Nelson Pit Road and East Highline Canal
Holtville, California

Prepared for:

Apex Energy Solutions, LLC
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Prepared by:

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(760) 337-1100

January 2021

GSL Lyon

Engineering And
Information Technology

January 18, 2021

Ms. Jamie Nagel
Apex Energy Solutions, LLC
750 W. Main Street
El Centro, CA 92243

Phase I Environmental Site Assessment Report
Vikings Solar Project (APNs 050-070-018, -019, -020)
Nelson Pit Road and East Highline Canal
Holtville, California
GSL Report No. GS2026

Dear Ms. Nagel:

We have performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM E1527-13 of the property located on Nelson Pit Road east of the East Highline Canal east of Holtville, California. Any exceptions to, or deletions from, this practice are described in Section 1.4 of this report.

This assessment has revealed the following recognized environmental conditions (REC's) in connection with the property:

- There is a potential of buried asbestos concrete (transite) pipe existing onsite for irrigation water distribution piping. The pipe material is only considered "friable" when disturbed. The piping material is not required to be removed, but if disturbed, requires proper handling with respiratory protection and if removed should be properly disposed by a qualified ACM abatement contractor.
- Old tires, household debris and concrete debris piles are found in the western portion of the subject site. This debris should be cleaned up and properly disposed.

This assessment has revealed the following "de minimis" environmental conditions (REC's) in connection with the property:

- Pesticide residues (low concentrations) typical to agricultural crop applications are present in the near surface soils.
- Pole-mounted sealed electrical transformers owned and maintained by the Imperial Irrigation District (IID) exist on this subject property. All IID transformers containing PCB's have been replaced. ***If the transformers begin to leak, the IID should be notified and the transformers replaced.***

We declare that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR §312 and we have the specific qualifications based on education, training and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Attached is our report which describes the procedures used and results of the assessment. If you have any questions or require additional information, please do not hesitate to contact the undersigned at (760) 337-1100. We appreciate the opportunity to provide our professional review for this subject property.

Respectfully Submitted,
GS Lyon Consultants, Inc.

Steven K. Williams, PG, CEG
Consulting Geologist

Peter E. LaBrucherie, PE
Consulting Engineer

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1.0 INTRODUCTION

1.1 Purpose

GS Lyon Consultants, Inc. was retained by Apex Energy Solutions, LLC to conduct a Phase I Environmental Site Assessment (ESA) for the Property (herein referred to as the subject property or subject property in this Phase I ESA Report) as a prerequisite to property transaction (purchase, sale, refinance, etc.). The subject property is located on Nelson Pit Road east of the East Highline Canal east of Holtville, California. See Plate 1 in Appendix B for a Vicinity Map of the subject property.

The purpose of this Phase I Environmental Site Assessment (ESA) is to identify, to the extent feasible, recognized environmental conditions (RECs) associated with past and present activities on the subject property or in the immediate subject property vicinity in general conformance to ASTM Standard E1527-13 "*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*" that may affect future uses of the subject property.

This report is intended to satisfy the Phase I ESA portion of "*all appropriate inquiry*" into the previous ownership and uses of the subject property as defined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at Title 42 of the United States Code (U.S.C.) §9601(35)(B) and in accordance with 40 Code of Federal Regulations (CFR) Part 312, Standards and Practices for All Appropriate Inquiries; Final Rule (AAI Rule).

1.2 Scope of Services

The scope of work for this ESA is in general accordance with the requirements of ASTM Standard E1527-13. This assessment included:

- Reconnaissance of the subject property and adjacent properties
- Review user-provided information
- Interviews with persons with significant knowledge of the subject property
- Review of a regulatory database report provided by a third-party vendor
- Review readily-available historical sources (including but not limited to: aerial photographs, fire insurance maps, property tax files, recorded land title records, and topographical maps)
- Prepare report of findings

1.3 Limitations

No Phase I ESA can completely eliminate uncertainty regarding the potential for RECs in connection with a property. Conformance of this assessment with ASTM Standard E1527-13 is intended to reduce, but not eliminate uncertainty regarding the potential for RECs in connection with the Subject Property. While GS Lyon has made reasonable effort to discover and interpret available historical and current information on the property within the time available, the possibility of undiscovered contamination remains. Our assessment of the subject property and surrounding areas was conducted in accordance with ASTM guidelines and the *generally accepted environmental engineering standard of practice* which existed in Imperial County, California at the time that the report was prepared. No warranty, express or implied, is made.

GS Lyon Consultants, Inc. derived the data in this report primarily from visual inspections, examination of public records and information in the public domain, informal interviews with individuals, and readily available information about the subject property. The passage of time, manifestation of latent conditions or occurrence of future events may require further exploration of the subject property, analysis of the data, and reevaluation of the findings, observations, and conclusions expressed in this report.

The findings, observations, and conclusions expressed by GS Lyon Consultants in this report are not, and should not be considered, an opinion concerning the compliance of any past or present owner or operator of the subject property with any federal, state or local law or regulation.

This report should not be relied upon after **180 days** from the date of issuance, unless additional services are performed as defined in ASTM E1527-13 - Section 4.7.

1.4 Deviations or Data Gaps

ASTM Standard E1527-13 requires any significant data gaps, deviations, and deletions from the ASTM Standard to be identified and addressed in the Phase I ESA. A significant data gap would be one that affected the ability to identify a REC on the subject property or adjacent properties.

Through the course of this assessment, *data failures* or *data gaps* may have been encountered. These failures or gaps, if any, are discussed below. The following provides the opinion of the Environmental Professional as to the significance of the data gaps in terms of defining *recognized environmental conditions* at the subject property. Data failures may or may not be significant data gaps, and the discussion also provides information pertaining to whether the data failures resulted in significant data gaps.

1.4.1 Data Failures

Data failure is a failure to achieve the historical (property use) research objectives specified in the ASTM Standard Practice even after reviewing the eight standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap. No *data failures w*ere encountered during this investigation.

1.4.2 Data Gaps

A *data gap* is a lack of or inability to obtain information required by the ASTM Standard Practice, despite good faith efforts by the Environmental Professional (EP) to gather such information. This could include any component of the Practice, e.g., standard environmental records, interviews, or a complete reconnaissance. A data gap by itself is not inherently significant, but if other information and/or the EP's experience raises reasonable concerns about the gap, it may be judged to be significant.

Due to the location of the subject property, Sanborn Fire Insurance maps were not available for the subject property. Because there is no historical data or physical indications that the property has ever been developed or occupied by a business that would have produced hazardous materials, the lack of Sanborn Fire Insurance maps is not considered a significant data gap.

Aerial photographs and other historical records were not available at 5 year intervals as required under the ASTM E1527-13 standard. This resulted in a data gap for years that records were not available regarding the area of the subject property. However, based upon other historical information reviewed, the subject property has been vacant desert land until the late 1940s when the subject site was developed for agricultural use. Therefore, this data gap is not considered to be significant.

Interviews with past owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap. Based on information obtained from other historical sources (as discussed in Section 3.0), this data gap is not expected to alter the findings of this assessment.

1.5 Significant Assumptions

In preparing this report, GS Lyon Consultants, Inc. has relied upon and presumed accurate certain information (or the absence thereof) about the subject property and adjacent properties by governmental officials and agencies, the Client, and others identified herein. Except as otherwise stated in the report, GS Lyon Consultants has not attempted to verify the accuracy or completeness of any such information.

1.6 User Reliance

This report has been prepared on behalf of and for the exclusive use of Apex Energy Solutions, LLC for the particular subject property identified in this report, and is subject to and issued in connection with the referenced Agreement and the provisions thereof. This report should not be relied upon by any party other than the client, its legal counsel, and financial institution without the express permission of GS Lyon Consultants, Inc. Any reliance on this report by other parties shall be at such party's sole risk. Any future consultation or provision of services to third parties related to the subject property requires written authorization from Apex Energy Solutions, LLC or their representatives. Any such services may be provided at GS Lyon Consultants sole discretion and under terms and conditions acceptable to GS Lyon Consultants, including potential additional compensation.

2.0 SITE DESCRIPTION

2.1 Site Location and Legal Description

The subject property is located on Nelson Pit Road east of the East Highline Canal (APNs 050-070-018, -019, -020) approximately 5.5 miles east of Holtville, California. The subject property location is depicted on Plate 1, Site Map.

2.2 Current Property Use and Description

The subject property is comprised of 3 parcels consisting of approximately 480 acres of agricultural use land (east parcel) and 125 acres of undeveloped desert land (two western parcels). The 480 acre agricultural use land is separated by East Nelson Pit Road, the north portion is currently in agricultural production while the southern portion is fallowed. The two western parcels are undeveloped desert land the abut and cross the IID's East Highline Canal.

2.3 Adjoining Property Use

The subject property is located within a mixed agricultural, desert, and geothermal resource area east of Holtville, California. Adjacent properties consist of agricultural use lands west of the East Highline Canal and vacant desert land to the north. Vacant desert land and geothermal wells and power plants are located to the east and south.

2.4 Physical Site Characteristics

Topography: Topographic maps (USGS 7.5 minute Holtville East, CA Quadrangle) indicate that the subject property elevation is approximately 35 to 50 feet above mean sea level (MSL) or Elevation 1035 to 1050 (local datum). The Imperial Irrigation District, which supplies power and raw (irrigation) water to the area, established local datum by equating mean sea level to El. 1000.00 feet.

Geologic Setting: The subject site is located in the East Mesa portion of the Salton Trough physiographic province. The Salton Trough is a geologic structural depression resulting from large scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments since the Miocene Epoch. Tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of seismicity. Figure 1 shows the location of the site in relation to regional faults and physiographic features.

The East Mesa lies east of the Imperial Valley, which is underlain by lacustrine deposits consisting of interbedded lenticular and tabular silt, sand, and clay, and west of the Algodones Sand Dunes. The East Mesa is underlain by deep sand deposits derived from eolian deposition along the eastern margin of the Imperial Valley.

The Late Pleistocene to Holocene lake deposits of the Imperial Valley are probably less than 100 feet thick and derived from periodic flooding of the Colorado River which intermittently formed Lake Cahuilla. Older deposits consist of Miocene to Pleistocene non-marine and marine sediments deposited during intrusions of the Gulf of California. Basement rock consisting of Mesozoic granite and Paleozoic metamorphic rocks are estimated to exist at depths between 15,000 - 20,000 feet

The project site lies within the East Mesa desert plain which is underlain by sandy soils which are generally non-expansive.

Soil Conditions: The U. S. Soil Conservation Service compiled a map of surface soil conditions and published a soil survey report including maps in 1980. The soil survey maps indicate that surficial deposits at the subject property and surrounding area consist predominantly of silty clay and silty clay loams of the Imperial soil group (see Appendix B). These loams are formed in sediment and alluvium of mixed origin (Colorado River overflows and fresh-water lake-bed sediments). Based on Unified Soil Classification System presented in the Soils Survey Report, the permeability of these soils is expected to be low to very low.

Groundwater Conditions: The groundwater in the vicinity of the subject property is brackish and is encountered at a depth of 8 to 20 feet below the ground surface. Depth to groundwater may fluctuate due to localized geologic conditions, seepage from the unlined East Highline Canal, precipitation, irrigation, drainage and construction practices in the region. Based on the regional topography, groundwater flow is assumed to be generally towards the east within the subject property area. Flow directions may also vary locally in the vicinity of the subject property.

3.0 USER PROVIDED INFORMATION

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *User* must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiry* is not complete. The user was asked to provide information or knowledge of the following:

- Environmental cleanup liens that are filed or recorded against the subject property.
- Activity and land use limitations that are in place on the subject property or that have been filed or recorded in a registry.
- Specialized knowledge or experience of the person seeking to qualify for the LLPs.
- Relationship of the purchase price to the fair market value of the *property* if it were not contaminated.
- Commonly known or *reasonably ascertainable* information about the *property*.
- The degree of obviousness of the presence or likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation.
- The reason for preparation of this Phase I ESA.

A user questionnaire was provided to the user to aid in gathering information that may be pertinent to the evaluation of the subject property for environmental conditions. The completed user questionnaire is provided in Appendix I.

3.1 Title Records

GS Lyon reviewed preliminary title reports as part of this assessment and did not find past ownership or easements that would indicate environmentally hazardous uses on the parcels.

3.2 Environmental Liens or Activity and Use Limitations

An environmental lien is a charge, security, or encumbrance upon the title to a property to secure the payment of a cost, damage, debt, obligation, or duty arising out of response actions, cleanup, or other remediation of hazardous substances or petroleum products upon the property. GS Lyon Consultants contracted Environmental Data Resources, Inc. (EDR) of Shelton, Connecticut to conduct a search of environmental liens for the subject property. According to the EDR environmental lien report, there are no environmental liens associated with the subject property. The EDR environmental lien report is included in Appendix I.

3.3 Specialized Knowledge

GS Lyon does not have personal knowledge of the subject property.

3.4 Commonly Known or Reasonable Ascertainable Information

No information was provided by the Client regarding any commonly known or reasonably ascertainable information within the local community that is material to RECs in connection with the subject property.

3.5 Valuation Reduction for Environmental Issues

The client indicated that the purchase price of this property reasonably reflects the fair market value of the property with no discounts for environmental issues.

3.6 Owner, Property Manager, and Occupant Information

The current owner of the subject property is the County of Imperial, RL&R Strahm, and ARB, Inc.

3.7 Previous Reports and Other Provided Documentation

No previous reports or other pertinent documentation was provided to GS Lyon for review during the course of this assessment.

4.0 RECORDS REVIEW

A review of historic aerial photographs (Appendix C), historic topographic maps (Appendix D), historic Sanborn Fire Insurance maps (Appendix E), governmental regulatory databases (Appendix F), other regulatory and agency databases (Appendix G), and historic telephone and city directories (Appendix H) was performed to evaluate potentially adverse environmental conditions resulting from previous ownership and uses of the subject property. The details of the review are presented in Sections 4.1 through 4.5 of this report.

4.1 Regulatory Database Review

4.1.1 Standard Environmental Record Sources

GS Lyon Consultants contracted Environmental Data Resources, Inc. (EDR) of Shelton, Connecticut which queries and maintains comprehensive environmental databases and historical information, including proprietary databases, aerial photography, topographic maps, Sanborn Maps, and city directories to generate a compilation of Federal, State and Tribal regulatory lists containing information regarding hazardous materials occurrences on or within the prescribed radii of ASTM E1527-13. The search of each database was conducted using the approximate minimum search distances from the subject property defined by the ASTM E1527-13 Standard. The purpose of the records review is to obtain and review *reasonably ascertainable* records that will help identify *recognized environmental conditions* or *historical recognized environmental conditions* in connection with the subject property.

EDR‘s Phase I ESA search package was ordered and performed on January 5, 2021. The search package included: Radius Map with Geocheck, aerial photographs, historic topographic maps, Sanborn maps, building permits, city directory, and property tax information.

The results of EDR’s search were used to evaluate if the subject property and/or properties within prescribed search distances are listed as having a past or present record of actual or potential environmental impact. Inclusion of a property in a government database list does not necessarily indicate that the property has an environmental problem.

The following is a brief synopsis of sites identified in the EDR Radius Map with Geocheck report. The government record search report is included in its entirety in Appendix F.

Federal NPL List

The Environmental Protection Agency's (EPA) National Priorities List (NPL) of uncontrolled or abandoned hazardous waste sites was reviewed for risk sites within a 1 mile radius of the subject property. The NPL identifies sites for priority cleanup and long-term care of properties under the Superfund Program that are contaminated with hazardous substances.

The database search did not identify any NPL sites within 1 mile of the subject property.

Federal CERCLIS List

The EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) listings were reviewed to determine if risks sites within ½ mile are listed for investigation. The CERCLIS database identifies hazardous waste sites that are on or proposed to be included in the NPL and sites that require investigation and possible remedial action to mitigate potential negative impacts on human health or the environment.

The CERCLIS database search did not identify any risk sites within 0.5 mile of the subject property.

Federal CERCLIS – No Further Remedial Action Planned

The EPA's CERCLIS – No Further Remedial Action Planned (NFRAP) database was reviewed to determine if risks sites within ½ mile are listed. CERCLIS NFRAP site are risk sites that have been removed from and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at the subject property has been completed and the EPA has determined that no further steps will be taken to list this subject property on the NPL, unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time.

This designation is for sites where no contamination was found, contamination was quickly removed without the need for the subject property to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration.

The CERCLIS – NFRAP database search did not identify any risk sites within ½mile of the subject property.

Federal RCRA List

The Federal Resource Conservation Recovery Act (RCRA) Notifiers List was reviewed to determine if RCRA treatment, storage or disposal sites (TSD) are located within 1 mile of the subject property. The RCRA Correction Action Sites List (CORRACTS) is maintained for risk sites which are undergoing "a corrective action". A corrective action order is issued when there has been a release of hazardous waste constituents into the environment from a RCRA facility.

The RCRA and RCRA CORRACTS database searches did not identify any RCRA TSD or RCRA CORRACTS risk sites within ½ mile of the subject property.

The RCRA regulated hazardous waste generator notifiers list was reviewed to determine if RCRA generator facilities are located on or adjoining the subject property. No RCRA generator facilities within ¼ mile of the subject property were identified in the database.

Federal ERNS List

The Federal Emergency Response Notification System (ERNS) List was reviewed to determine if reported release of oil and/or hazardous substances occurred on the subject property.

The ERNS database searches did not identify any reported releases for the subject property.

State and Tribal NPL List

The Environmental Protection Agency's (EPA) National Priorities List (NPL) of uncontrolled or abandoned hazardous waste sites was reviewed for risk sites within a 1 mile radius of the subject property. The NPL identifies sites for priority cleanup and long-term care of properties under the Superfund Program that are contaminated with hazardous substances.

The database search did not identify any NPL sites within 1 mile of the subject property.

State and Tribal equivalent CERCLIS

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifies sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites.

EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites. The EnviroStor database search did not identify any risk sites within 1 mile of the subject property.

State and Tribal Leaking Underground Storage Tank Sites

The California State Water Resources Control Board (SWRCB) maintains a list of information concerning reported leaking underground storage tanks (LUST). The LUST inventory list was reviewed to determine if any LUSTs are located within ½ mile the subject property.

The SWRCB LUST database did not identify any risk sites within ½ mile of the subject property.

State and Tribal Underground and Aboveground Storage Tank Sites

The California State Water Resource Control Board (SWRCB) underground storage tank (UST) and above ground storage tank (AST) inventory list was reviewed to determine if any UAST's are located on or adjacent to the subject property.

The SWRCB UST and AST databases did not identify any risk sites within ¼ mile of the subject property.

Solid Waste Disposal/Landfill Facilities

The Solid Waste Disposal/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data comes from the Integrated Waste Management Board's Solid Waste Information System (SWIS) database.

A review of the SWF/LF list database did not identify any risk sites within ½ mile of the subject property.

Unmapped (Orphan) Sites

Not all sites or facilities identified in the database records can be accurately located in relation to the Subject Property due to incomplete information being supplied to the regulatory agencies and are referred to as "orphan sites" by EDR. No unmapped (orphan) listings were reported.

4.1.2 Additional Environmental Record Sources

California Department of Toxic Substances Control (DTSC) Records – Envirostor Database: EnviroStor is an online search and Geographic Information System tool for identifying sites that have known contamination or sites for which there may be reasons to investigate further. Public Access to EnviroStor is accessible via the DTSC Web Page located at: http://www.envirostor.dtsc.ca.gov/public/. The EnviroStor database includes the following site types: Federal Superfund sites (National Priority List); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. The information includes site name, site type, status, address, any restricted use (recorded deed restrictions), past use(s) that caused contamination, potential contaminants of concern, potential environmental media affected, site history, planned and completed activities. The EnviroStor database also contains current and historical information relating to Permitted and Corrective Action facilities. The EnviroStor database includes current and historical information on the following permit-related documents: facility permits; permit renewal applications; permit modifications to an existing permit; closure of hazardous waste management units (HWMUs) or entire facilities; facility corrective action (investigation and/or cleanup); and/or post-closure permits or other required post-closure activities.

The EnviroStor database was queried on January 5, 2021. A map showing the results of the query is provided in Appendix G. No reported cases were found on the subject property. No risk sites were located within ½ mile of the subject property.

California State Water Resources Control Board Records – GeoTracker Database: GeoTracker is a geographic information system (GIS) maintained by the California State Water Resources Control Board (SWRCB) that provides online access to environmental data at http://www.geotracker.swrcb.ca.gov\. GeoTracker tracks regulatory data about underground fuel tanks, fuel pipelines, and public drinking water supplies. Site information from the Spills, Leaks, Investigations, and Cleanups (SLIC) Program is also included in GeoTracker.

The GeoTracker database was queried for environmental data pertaining to the Subject property on January 5, 2021. A map showing the results of the query is provided in Appendix G. No reported cases were found on the subject property. No risk sites were located within ½ mile of the subject property.

CalEPA Records Search: CalEPA Regulated Site Portal is a website that combines data about environmentally regulated sites and facilities in California into a single, searchable database and interactive map. The portal was created to provide a more holistic view of regulated activities statewide. By combining data from a variety of state and federal databases, the portal provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials. The portal combines information from the following databases: Cal/OSHA, California Environmental Reporting System (CERS), California Integrated Water Quality System (CIWQS), US EPA's Air Emission Inventory System (EIS), Envirostor, Geotracker, Stormwater Multiple Application and Report Tracking System (SMARTS), Solid Waste Information System (SWIS), and Toxics Release Inventory (TRI).

The CalEPA database was queried for environmental data pertaining to the Site on January 5, 2021. No risk sites were noted on or adjacent to the subject property.

CUPA Records Search: The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. Cal/EPA and other state agencies set the standards for their programs while local governments implement the standards—these local implementing agencies are called Certified Unified Program Agencies (CUPA).

The DTSC Imperial CUPA office was contacted (Veronica Lopez) by email on January 5, 2021. CUPA records were searched for environmental issues related to the subject property. The DTSC indicated that records are filed per address, and with no known address associated with the subject property, no records were found associated with the subject property.

4.2 Historical Use Records

ASTM E1527-13 requires the environmental professional to identify all obvious uses of the property from the present back to the property's first developed use or 1940, whichever is earliest. This information is collected to identify the likelihood that past uses have led to RECs in connection with the property. This task is accomplished by reviewing standard historical sources to the extent that they are necessary, reasonably ascertainable, and likely to be useful. These standard records include aerial photographs, fire insurance maps, property tax files, land title records, topographic maps, city directories, telephone directories, building department records, and zoning/land use records.

The general type of historical use (i.e., commercial, retail, residential, industrial, undeveloped, office) should be identified at 5-year intervals, unless the specific use of the property appears to be unchanged over a period longer than 5 years. The historical research is complete when the use is defined or when data failure occurs. Data failure occurs when all of the standard historical sources have been reviewed, yet the property use cannot be identified back to its first developed use or to 1940. Data failure is not uncommon in trying to identify the use of the property at 5-year intervals back to first use or 1940, whichever is earlier.

GS Lyon reviewed the following historical records to identify obvious uses of the subject property from the present back to the property's first developed use, or to 1940, whichever is earlier. The results of this research and data failure, if encountered, are presented in the following sections.

4.2.1 Title Records

GS Lyon reviewed preliminary title reports as part of this assessment and did not find past ownership or easements that would indicate environmentally hazardous uses on the parcels.

4.2.2 Sanborn Fire Insurance Maps

Sanborn Fire Insurance Maps are large scale maps depicting the commercial, industrial, and residential sections of various cities across the United States. Since the primary use of the fire insurance maps was to assess the buildings that were being insured, the existence and location of fuel storage tanks, flammable or other potentially toxic substances, and the nature of businesses are often shown on these maps.

Due to the rural undeveloped nature of the subject property and vicinity for the years the Sanborn Fire Insurance Maps were available for this subject property, no maps are available for the subject property. An "Unmapped Property" letter for the Sanborn Fire Insurance Maps is included in Appendix E.

4.2.3 Aerial Photographs

Aerial photographs obtained from Environmental Data Resources (EDR) dating back to 1937, the Imperial Irrigation District (IID) archives dating back to 1949, and Google Earth aerial photographs dating back to 1996 were reviewed for historical development of the subject property. Reproductions of the historical aerial photographs reviewed are included in Appendix C.

The 1937 aerial photograph shows the subject property as being vacant desert land. The ancient shoreline of Lake Cahuilla is visible along the west side of the subject site. The East Highline Canal (EHL) is also present on the western margin of the subject site.

The 1949 aerial photograph shows the subject site undergoing land leveling for the agricultural field. The East Highline Canal appears to have been widened since the 1937 aerial photograph.

The 1953 shows a majority of the subject site has been converted into agricultural production. The western portion of the subject site remains undeveloped except for a small structure located north of Nelson Pit Road adjacent to the EHL Canal.

The 1976 aerial photograph shows the subject site as being predominantly an agricultural field. A raw water pond and a rural residence and farm shop have been constructed on the west side of the agricultural fields.

The 1985, 1996, 2002 and 2006 aerial photographs are similar to the 1976 aerial photograph. The agricultural crop appears to have changed from a ground crop to citrus orchards.

The 2009 aerial photograph shows the subject site as being similar to the 2006 aerial photograph except that the orchards have been removed from the agricultural areas. A raw water pond has been constructed south of the rural residence.

The 2012 and 2016 aerial photographs are similar to the 2009 aerial photograph except that the northern half of the agricultural area has been converted back to ground crops while the southern half is fallow.

4.2.4 Street Directories

GS Lyon Consultants contracted Environmental Data Resources, Inc. (EDR) of Shelton, Connecticut to conduct a search of historic city directories for the subject property (Appendix H). City directories are used for locating individuals and businesses in a particular urban or suburban area. City directories are generally divided into three sections: a business index, a list of resident names and addresses, the name and type of businesses (if unclear from the name). While city directory coverage is comprehensive for major cities, it may be spotty for rural and small towns.

EDR Digital Archives and Haynes Criss-Cross Directories: The EDR Digital Archives and Haynes Criss-Cross City Directories for the years 1992, 1995, 2000, 2005, 2010, and 2017 were reviewed. No listings for the subject property were found.

Polk City Directories: The Polk City Directories for the years 1963 and 1984 were reviewed. No listings for the subject site was found.

4.2.5 Historic Topographic Maps

Historic topographic maps (1907, 1940, 1945, 1947, 1957, 1979, and 2012), USGS 30 Min. Holtville, 15 Min. Alamorio and 7.5 Min. Holtville East, CA Quadrangles, showed the subject property as being vacant from 1907 to 1947 (Appendix D).

The 1957 and 1979 topographic maps show a structure at the location of the rural residence and also a structure in the northwest corner of the subject property. A "mine" is also shown on the south side of Nelson Pit Road where soil was surface mined.

The 2012 topographic map does not show any development on the subject property.

4.2.6 Historical Telephone Directories

Telephone Directories: Telephone directories for the Imperial County, which included the City of Holtville businesses published in 1941, 1955, 1965, and 1974 were reviewed. No service stations, chemical manufacturers, petroleum manufacturers, distributors, or automotive repair facilities were noted at or in the immediate vicinity of the subject property.

4.3 Historical Use Summary

4.3.1 Summary of the Historical Use of Property

Based on a review of the historical information, the subject property was first developed in the late 1940s for agricultural use. Prior to development of the agricultural fields, the subject site was vacant desert land. The western portion of the subject site may have been used for surface mining of soil along the ancient Lake Cahuilla shoreline.

4.3.2 Summary of the Historical Use of Adjacent Properties

Historically, the properties located immediately adjacent to the subject property have been comprised of agricultural fields to the west and vacant desert lands to the east. Development of the geothermal resource to the east began in the 1970s and 1980s.

5.0 SITE RECONNAISSANCE

5.1 Methodology and Limiting Conditions

A site reconnaissance was performed by Mr. Pete LaBrucherie, a consulting engineer to GS Lyon Consultants, on November 13, 2020. The site visit consisted of a walking the perimeter of the subject property and randomly crossing the subject property. The reconnaissance included visual observations of surficial conditions at the subject property and observation of adjoining properties to the extent that they were visible from public areas. Mr. LaBrucherie was unaccompanied during the site reconnaissance.

The site reconnaissance was limited to visual and/or physical observation of the exterior and interior of the subject property and its improvements, the current uses of the property and adjoining properties, and the current condition of the property. The site visit evaluated the subject property and adjoining properties for potential hazardous materials/waste and petroleum product use, storage, disposal, or accidental release, including the following: presence of tank and drum storage; mechanical or electrical equipment likely to contain liquids; evidence of soil or pavement staining or stressed vegetation; ponds, pits, lagoons, or sumps; suspicious odors; fill and depressions; or any other condition indicative of potential contamination. The site visit did not evaluate the presence of asbestos-containing materials, radon, lead-based paint, mold, indoor air quality, or structural defects, or other non-scope items.

A site reconnaissance can be limited by weather conditions, bodies of water, adjacent buildings, or other obstacles. The weather was warm and sunny and no access limitations were placed on the site visit that the farm residence and shop structure interior were not accessed during the site visit. There was no one was onsite during the visit to provide access.

5.2 General Site Setting

The subject property is comprised of 3 parcels consisting of approximately 480 acres of agricultural use land (east parcel) and 125 acres of undeveloped desert land (two western parcels). The 480 acre agricultural use land is separated by East Nelson Pit Road. The north portion is currently in agricultural production while the southern portion is fallowed. The two western parcels are undeveloped desert land the abut and cross the IID's East Highline Canal.

The subject property eastern parcel is currently in crop production in the northern half while the southern half is fallowed. This parcel has two raw water irrigation reservoirs with pump systems located along the western boundary of the parcel.

Power lines with pole mounted transformers are located within the site for the residence and irrigation pump locations. There is a farm residence and shop located along the western boundary of this parcel just south of East Nelson Pit Road. Outside of the shop there are some empty above ground tanks and a 55-gallon drum of used oil. The inside of the shop and residence were not open for access during the visit. There are multiple pole mounted transformers adjacent to concrete standpipes scattered around the property. The standpipes have electrical water pumps. The water pumps near the reservoirs are still in operation. The southern fallowed portion has underground transit gravity flow pipelines used to distribute water around the field

The subject property's west parcels are undeveloped desert land with scattered large desert vegetation, concrete debris piles, and scattered household trash piles on the south end. The parcels abut and cross the East Highline Canal. The side against the canal is elevated above the canal waterline with a depressed area in the middle of the parcels that parallels the canal.

Photographs of the subject property taken on November 13, 2020 during our site reconnaissance are included in Appendix A.

5.3 Adjacent Properties

The subject property is located within a mixed agricultural, desert, and geothermal resource area east of Holtville, California. Adjacent properties consist of agricultural use lands west of the East Highline Canal and vacant desert land to the north. Vacant desert land and geothermal wells and power plants are located to the east and south. Along the outside of the southern boundary of the property there is a large pile used tires.

5.4 Exterior and Interior Observations

The following conditions were specifically assessed for their potential to indicate RECs and may include conditions inside or outside structures on the subject property.

5.4.1 Hazardous Substances and Petroleum Products

GS Lyon did not observe operations that use, treat, store, dispose of, or generate hazardous materials or petroleum products on the subject property other than farm equipment that is stored onsite and a 55-gallon drum of used oil outside of the farm shop area.

5.4.2 Storage Tanks

Underground Storage Tanks (USTs) – No obvious visual evidence indicating the current presence of USTs (i.e. vent pipes, fill ports, etc.) was noted.

Aboveground Storage Tanks (ASTs) – There was visual evidence indicating the historical presence of ASTs (i.e. secondary containments, concrete saddles, etc.) was observed to the east of the existing farm shop structure. There are 3 empty tanks located within the containment area and further to the east is a large (>5,000 gallon) empty metal tank.

5.4.3 Odors

No obvious strong, pungent, or noxious odors were noted during the site reconnaissance.

5.4.4 Pools of Liquid

Pools of liquid were not observed during the site reconnaissance.

5.4.5 Drums and Containers

GS Lyon did observe drums and storage containers on the subject property. A 55-gallon used oil drum is located east of the farm shop structure. Multiple 5-gallon buckets were observed within the shop structure.

5.4.6 Unidentified Substance Containers

GS Lyon did not observe open or damaged containers containing unidentified substances at the subject property other than unidentified 5-gallon buckets within the shop structure.

5.4.7 Suspect Polychlorinated Biphenyl (PCB) Containing Equipment

No potential PCB containing equipment such as electrical transformers, capacitors, and hydraulic equipment were observed during the site reconnaissance on the subject property or immediate vicinity.

Pole-mounted sealed electrical transformers owned and maintained by the Imperial Irrigation District (IID) are located on multiple power poles within the subject property. In recent years, the IID has replaced all transformers that contained PCB's. No leaks were noted during our site visit.

5.5 Interior Observations

The subject property currently has two structures, a farm residence and a shop structure.

Access to the structures was not provided; therefore, no interior observations were made during our site reconnaissance.

5.6 Exterior Observations

5.6.1 Pits, Ponds, and Lagoons

No pits, ponds, or lagoons were noted on the subject property other than the two raw water irrigation reservoirs.

5.6.2 Stained Soils or Pavement

No evidence of significantly stained soil or pavement was noted on the subject property.

5.6.3 Stressed Vegetation

No evidence of stressed vegetation attributed to potential contamination was noted on the subject property.

5.6.4 Solid Waste

No dumpsters or solid waste containers exist on the subject property. There were debris piles scattered throughout the two western parcels.

5.6.5 Wastewater

Wastewater generated at the subject property is limited to sinks, toilets, etc. and is disposed of via the farm residence septic system.

5.6.6 Wells

No evidence of wells (dry wells, drinking water, observation wells, groundwater monitoring wells, irrigation wells, injection wells or abandoned wells) was noted on the subject property.

5.6.7 Septic Systems

The farm residence is likely connected to a septic system, non was identified during site visit.

5.7 Non-Scope Issues

ASTM guidelines identify non-scope issues, which are beyond the scope of a Phase I ESA as defined by ASTM. These issues may affect environmental risk at the subject property and may warrant discussion and/or assessment. Some of these non-scope issues include; asbestos-containing building materials, radon, lead-based paint, and wetlands which are discussed below.

5.7.1 Asbestos-Containing Building Materials

There is a potential for asbestos containing materials (ACM) existing at the subject property due to the age of the buildings. Asbestos may also exist in the old transit waterlines and concrete standpipes.

5.7.2 Lead-Based Paint

There is a potential for lead based paint residues existing at the subject property due to the age of the buildings.

5.7.3 Radon

The subject property is located in Zone 3 as shown on the EPA Map of Radon Zones indicating a predicted average indoor radon screening level of less than 2 pCi/L; therefore, no further action is required. Radon gas is not believed to be a potential hazard at the subject property.

5.7.4 Wetlands

No wetlands are located within one (1) mile of the subject property.

5.7.5 Agricultural Use

Based on our review of environmental records, historical documents, and subject property conditions, the property has been in agricultural use and/or vacant since the late 1940's. Residues of currently available pesticides and currently banned pesticides such as DDT/DDE may be present in near surface soils in limited concentrations. The concentrations of these pesticides found on other Imperial Valley agricultural sites are typically less than 25% of the current regulatory threshold limits and, at those levels, are not considered a significant environmental hazard. The presence and concentration of near surface pesticides at this subject property can be accurately characterized only by site-specific sampling and testing.

6.0 INTERVIEWS

GS Lyon interviewed various individuals familiar with the subject property, as identified to us, and/or government officials in order to evaluate historical uses and identify potential RECs existing on the subject property. The individuals interviewed were asked to provide responses in good faith and to the best of their knowledge. The following sections identify the individuals interviewed and summarize the information each provided; however, additional information provided by these individuals may be presented in other sections of this report.

6.1 Interview with Owner

GS Lyon we not able to contact the current property owner; therefore, no interview was conducted.

6.2 Interview with the Site Manager

The subject property is vacant, undeveloped land and active and fallow agricultural land. No site manager was available for an interview.

6.3 Interview with Occupants

The subject property is vacant, undeveloped land and active and fallow agricultural land; therefore, there are no occupants.

6.4 Interview with Local Government Officials

The DTSC Imperial CUPA office was contacted (Veronica Lopez) by email on January 5, 2021. CUPA records were searched for environmental issues related to the subject property. The DTSC indicated that records are filed per address, and with no known address associated with the subject property, no records were found associated with the subject property.

Interviews with past owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap.

7.0 EVALUATION

7.1 Summary of Findings

The approximately 605-acre property on Nelson Pit Road east of the East Highline Canal approximately 5.5 miles east of Holtville, California. The eastern portion (APN 050-070-018) of the subject property was first developed about 1949 for agricultural use. The western portion (APNs 050-070-019 and -020) of the subject site has remained vacant desert land.

7.2 Conclusions

GS Lyon has performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM E1527-13 of the property located on Nelson Pit Road east of the East Highline Canal approximately 5.5 miles east of Holtville, California. Any exceptions to, or deviations from, this practice are described in Section 1.4 of this Phase I ESA report.

7.2.1 Recognized Environmental Conditions

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term REC includes hazardous substances and petroleum products even under conditions that might be in compliance with laws. The term is not intended to include "de minimis" conditions as defined in Section 7.2.3 of this report.

This assessment has revealed the following RECs for the study site:

1. There is the potential for buried asbestos concrete (transite) pipe existing onsite for irrigation water piping. The pipe material is only considered “friable” when disturbed. The piping material is not required to be removed, but if disturbed, requires proper handling with respiratory protection and if removed should be properly disposed by a qualified ACM abatement contractor.
2. Old tires, household debris and concrete debris piles are found in the western portion of the subject site. This debris should be cleaned up and properly disposed.

7.2.2 Historical Recognized Environmental Conditions

A *historical recognized environmental condition (HREC)* refers to a past *release* of any *hazardous substances* or *petroleum products* that has occurred in connection with the *property* and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the *property* to any required controls (for example, *property* use restrictions, *activity and use limitations*, *institutional controls*, or *engineering controls*).

This Phase I ESA has revealed no evidence of *historical recognized environmental conditions* in connection with the subject property.

7.2.3 Environmental Concerns and De Minimis Conditions

A *de minimis condition* is a condition that generally does not present a threat to human health or the *environment* and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis conditions* are not *recognized environmental conditions* nor *controlled recognized environmental conditions*.

This Phase I ESA has revealed the following *de minimis* conditions or environmental concerns in connection with the subject property:

1. Pole-mounted sealed electrical transformers owned and maintained by the Imperial Irrigation District (IID) exist on this subject property. All IID transformers containing PCB's have been replaced. ***If the transformers begin to leak, the IID should be notified and the transformers replaced.***
2. Pesticide residues (low concentrations) typical to agricultural crop applications are present in the near surface soils.

7.3 Recommendations

Based on the scope of work performed for this assessment, it is our professional opinion that no RECs have been identified in connection with the subject property that would warrant further environmental study (Phase II) at this time.

8.0 REFERENCES

40 CFR 312, Standards and Practices for All Appropriate Inquiries; Final Rule, November 2005 (AAI Rule).

American Society for Testing and Materials. 2013. Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. Designation E 1527-13. West Conshohocken, Pennsylvania. 35 pp.

Department of Toxic Substances Control. 2021. EnviroStor Database Website, http://www.envirostor.dtsc.ca.gov/public/ .

Environmental Data Resources, Inc., *The EDR Radius Map with Geocheck*. Inquiry number 6320675, dated January 6, 2021

Environmental Data Resources, Inc., *The EDR-City Directory Abstract*. Inquiry number 6320675, dated January 6, 2021

Environmental Data Resources, Inc., *EDR Historical Topographic Map Report*. Inquiry number 6320675, dated January 6, 2021

Environmental Data Resources, Inc., *The EDR Aerial Photo Decade Package*. Inquiry number 6320675, dated January 6, 2021

Environmental Data Resources, Inc., *Sanborn Map Report*. Inquiry number 6320675, dated January 6, 2021

Environmental Data Resources, Inc., *The EDR Property Tax Map Report*. Inquiry number 6320675, dated January 6, 2021

Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, Community Number 06025C1775C, dated September 2008

State Water Resources Control Board. 2021. GeoTracker Database Website, http://geotracker.swrcb.ca.gov/

United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey, accessed via the Internet, January 2021

United States Environmental Protection Agency, EPA Map of Radon Zones (Document EPA-402-R-93-071), accessed via the Internet, January 2021

United States Geological Survey Topographic Map 1997, 7.5 minute series

APPENDIX A

Photo 1: Looking north along the west boundary of the subject property east parcel from E. Nelson Pit Road (Photo Location 1, Plate A-2).

Photo 2: Looking northeast across the subject property east parcel from the west end E. Nelson Pit Road (Photo Location 1, Plate A-2).

Photo 3: Looking south along the west boundary of the subject property east parcel from E. Nelson Pit Road (Photo Location 1, Plate A-2).

Photo 4: Looking southeast across the subject property east parcel from the west end of E. Nelson Pit Road (Photo Location 1, Plate A-2).

Photo 5: Looking southwest across the subject property east parcel from the east end E. Nelson Pit Road (Photo Location 2, Plate A-2).

Photo 6: Looking north across the subject property east parcel from the east end E. Nelson Pit Road (Photo Location 2, Plate A-2).

Photo 7: Looking west across the subject property east parcel from the east end of the field road at the north quarter of the site (Photo Location 3, Plate A-2).

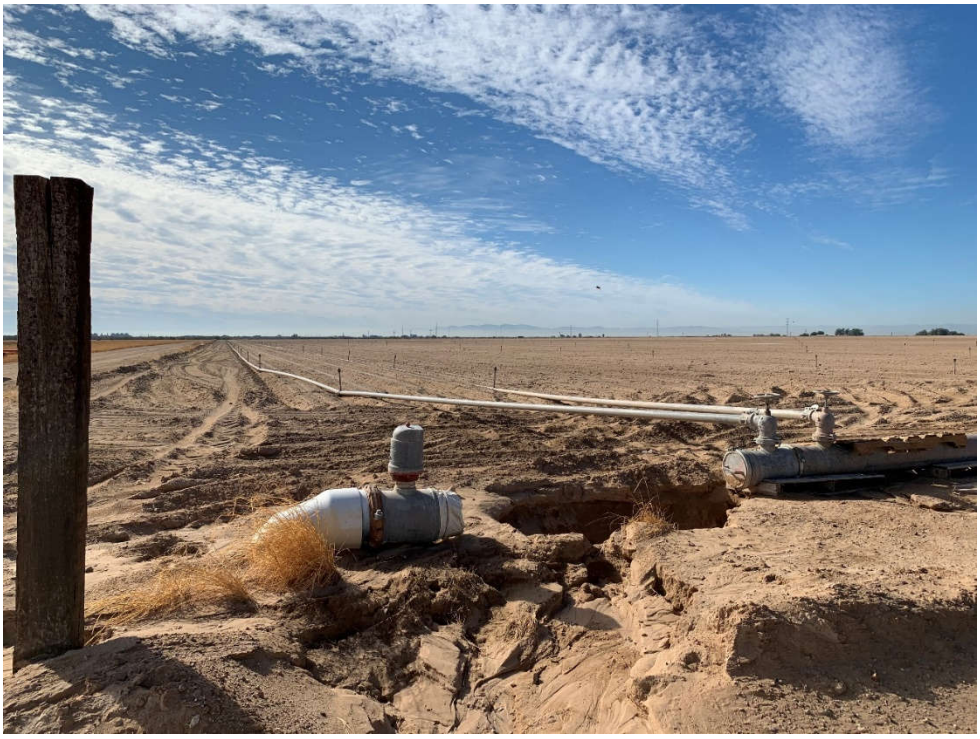


Photo 8: Looking southwest across the subject property east parcel from photo location #4 (Photo Location 4, Plate A-2).

Photo9: Looking west to northwest across the subject property east parcel from photo location #5 (Photo Location 5, Plate A-2).

Photo 10: Looking south at the irrigation reservoir within the north side of subject property east parcel from photo location #6 (Photo Location 6, Plate A-2).

Photo 11: Looking southwest at the concrete stacked within the north side of subject property east parcel from photo location #6 (Photo Location 6, Plate A-2).

Photo 12: Looking west at the irrigation reservoir's pump system and pole mounted transformers within the north side of subject property east parcel from photo location #6 (Photo Location 6, Plate A-2).

Photo 13: Looking west to southwest across the north side of subject property east parcel from the northeast corner of the site (Photo Location 7, Plate A-2).

Photo 14: Looking south to southwest across the northwest parcel from the northern boundary of the subject property (Photo Location 8, Plate A-2).

Photo 15: Looking east at concrete debris pile at the northwest parcel of the subject property (Photo Location 9, Plate A-2).

Photo 16: Looking southwest at concrete slab within northwest parcel of the subject property (Photo Location 10, Plate A-2).

Photo 17: Looking east at concrete debris within northwest parcel of the subject property (Photo Location 10, Plate A-2).

Photo 18: Looking east at water pipe within northwest parcel of the subject property (Photo Location 11, Plate A-2).

Photo 19: Looking south across the southwest parcel of the subject property (Photo Location 12, Plate A-2).

Photo 20: Looking east along the southern boundary of the southwest parcel of the subject property (Photo Location 13, Plate A-2).

Photo 21: Looking at glass debris within the southwest parcel of the subject property (Photo Location 14, Plate A-2).

Photo 22: Looking at concrete debris within the southwest parcel of the subject property (Photo Location 15, Plate A-2).

Photo 23: Looking at debris within the southwest parcel of the subject property (Photo Location 15, Plate A-2).

Photo 24: Looking southeast at the irrigation ditch and the reservoir at the southwest end of the eastern parcel of the subject property (Photo Location 15, Plate A-2).

Photo 25: Looking south at the residence within the eastern parcel of the subject property (Photo Location 16, Plate A-2).

Photo 26: Looking west at the shop on the south side of the residence within the eastern parcel of the subject property (Photo Location 17, Plate A-2).

Photo 27: Looking southeast at empty above ground tanks on the east side of the shop building within the eastern parcel of the subject property (Photo Location 17, Plate A-2).

Photo 28: Looking east at a 50-gallon drum of used oil and empty chemical tank on the east side of the shop building within the eastern parcel of the subject property (Photo Location 17, Plate A-2).

Photo 29: Looking south at cistern and pump south of shop within the eastern parcel of the subject property (Photo Location 17, Plate A-2).

Photo 30: Looking south at cistern with pump and concrete debris south of shop within the eastern parcel of the subject property (Photo Location 18, Plate A-2).

Photo 31: Looking east across the south portion of the eastern parcel of the subject property (Photo Location 19, Plate A-2).

Photo 32: Looking southwest at piles of used tires south of the southern boundary of the eastern parcel of the subject property (Photo Location 20, Plate A-2).

Photo 33: Looking east along the southern boundary of the eastern parcel of the subject property (Photo Location 21, Plate A-2).

Photo 34: Looking north across the eastern parcel of the subject property (Photo Location 21, Plate A-2).

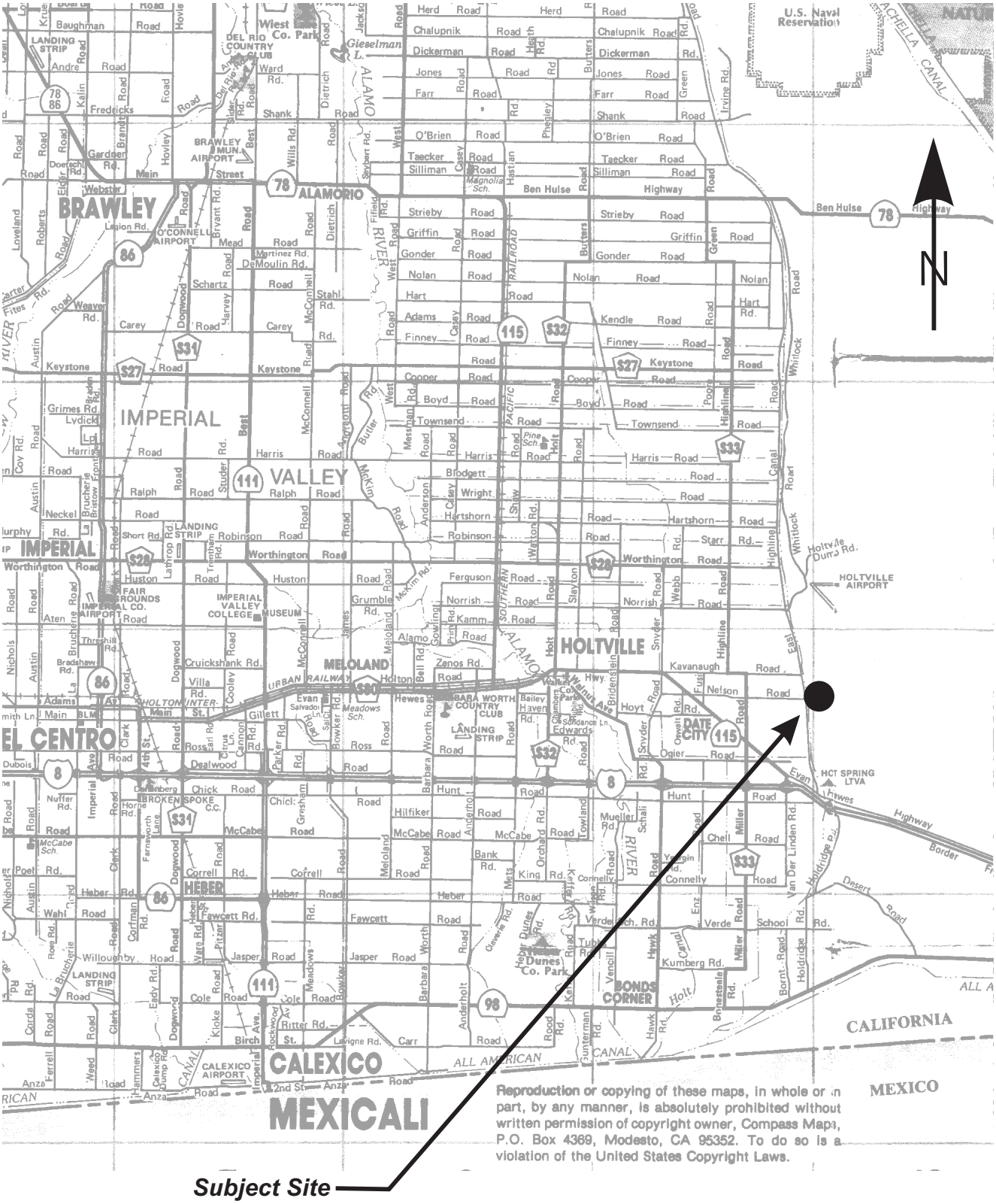
Photo 35: Looking northwest across the eastern parcel of the subject property (Photo Location 21, Plate A-2).

Photo 36: Looking at concrete transite water pipe remains within the eastern parcel of the subject property (Photo Location 22, Plate A-2).

Photo 37: Looking at underground concrete transite water pipe within the eastern parcel of the subject property (Photo Location 22, Plate A-2).

Photo 38: Looking west at large empty above ground tank and pole mounted transformers within the eastern parcel of the subject property (Photo Location 23, Plate A-2).

APPENDIX B

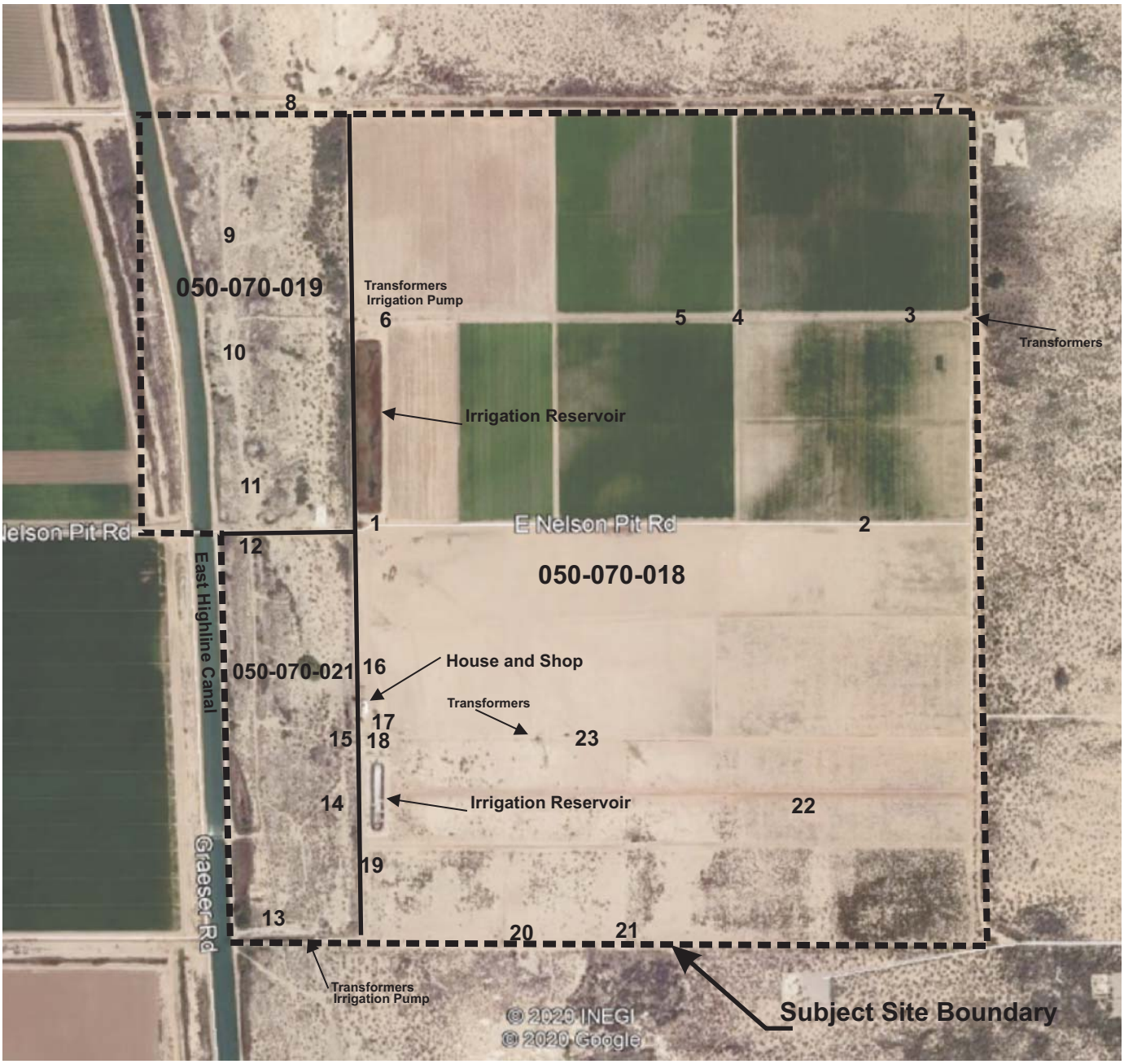


GS Lyon

Project No.: GS2026

Vicinity Map

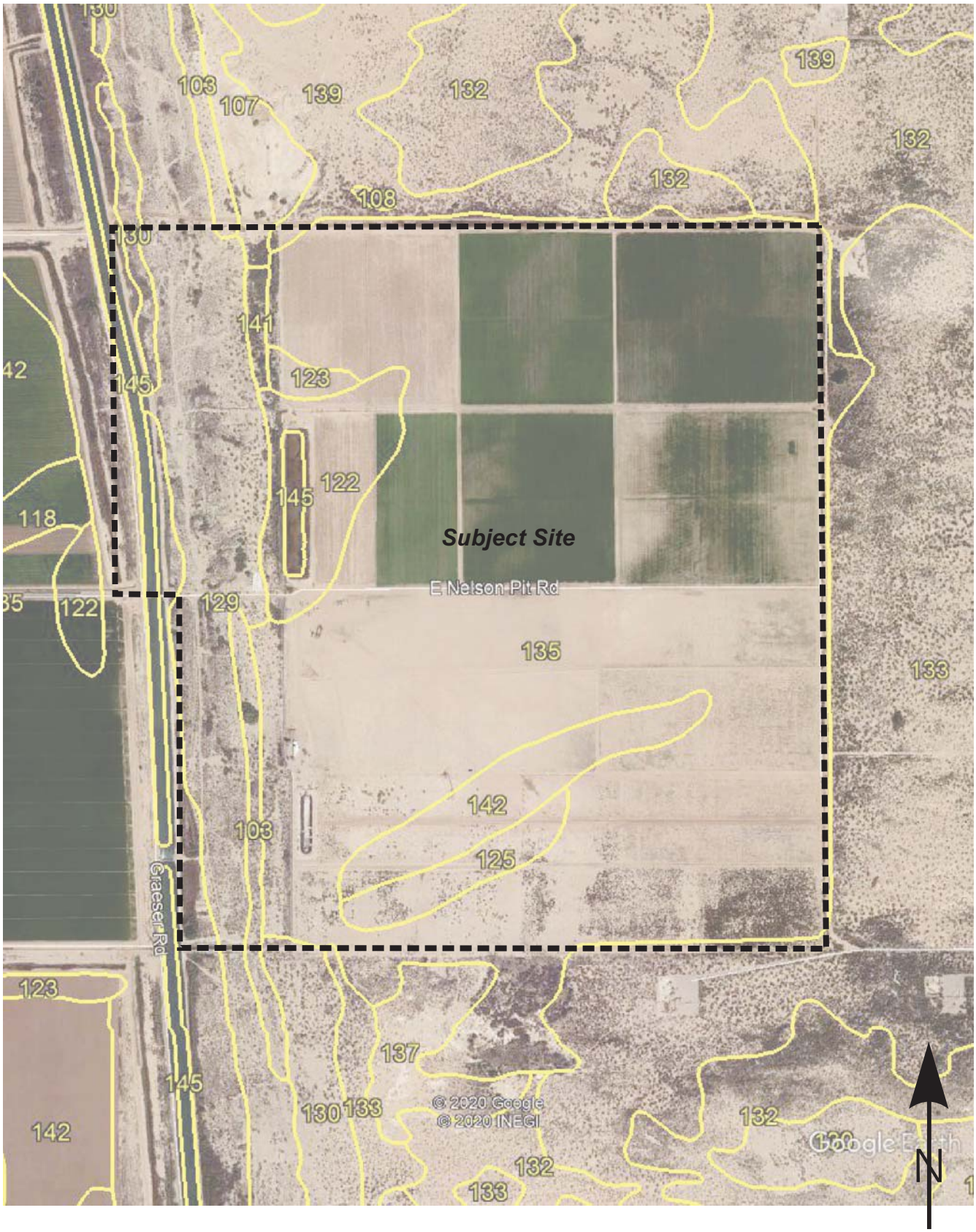
Plate 1



- Photo Location (See Photos Page)

N

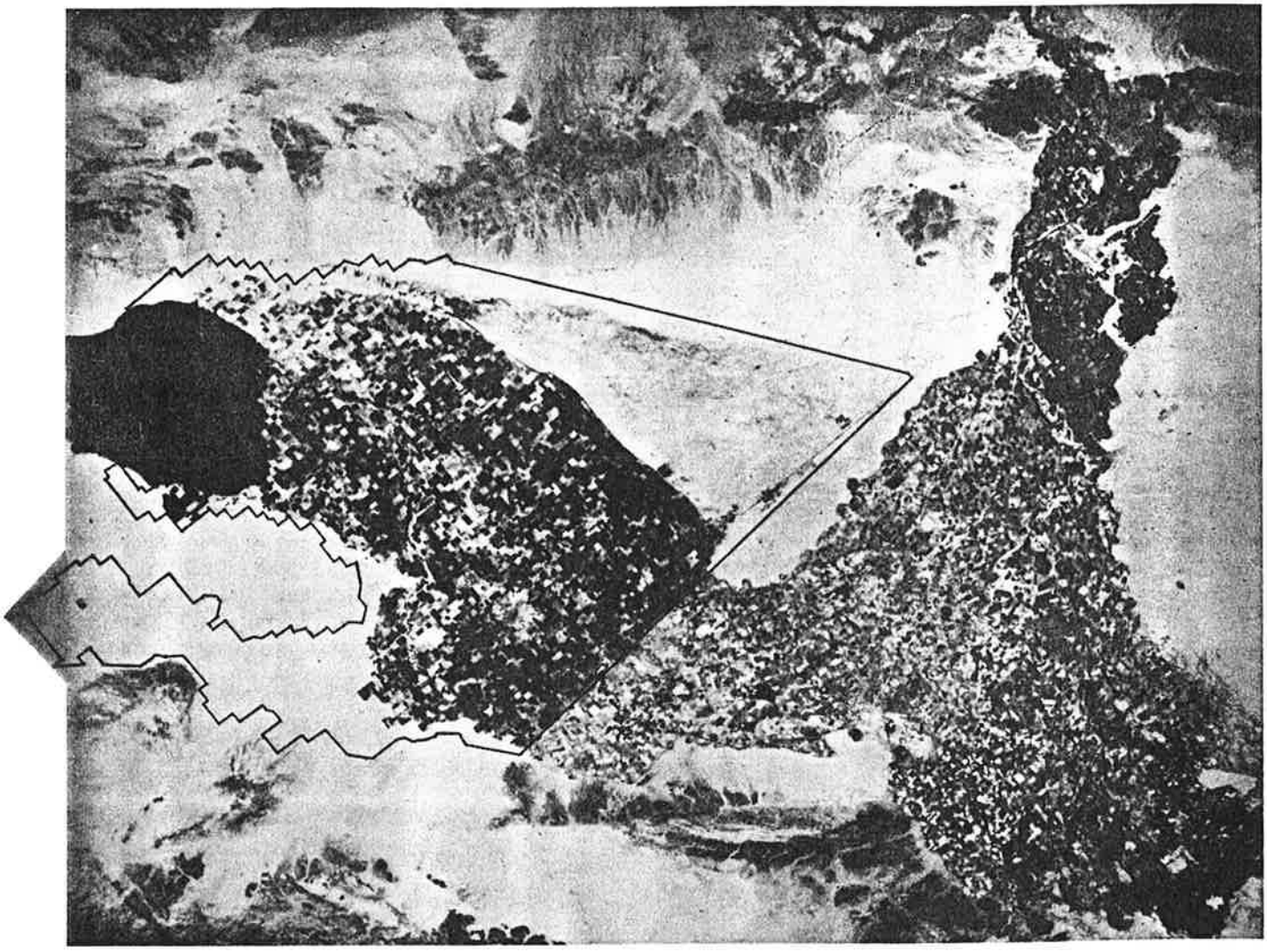
GS Lyon Project No.: GS2026	Site Map	Plate 2



GS Lyon Project No.: GS2026	Soil Survey Map	Plate 3

Soil Survey of

IMPERIAL COUNTY CALIFORNIA IMPERIAL VALLEY AREA



United States Department of Agriculture Soil Conservation Service
in cooperation with
University of California Agricultural Experiment Station
and
Imperial Irrigation District

TABLE 11.--ENGINEERING INDEX PROPERTIES

[The symbol > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
100---------- Antho	0-13	Loamy fine sand	SM	A-2	0	100	100	75-85	10-30	---	NP
	13-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	90-100	75-95	50-60	15-40	---	NP
101*:											
Antho----------	0-8	Loamy fine sand	SM	A-2	0	100	100	75-85	10-30	---	NP
	8-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	90-100	75-95	50-60	15-40	---	NP
Superstition------	0-6	Fine sand-------	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
102*. Badland											
103---------- Carsitas	0-10	Gravelly sand---	SP, SP-SM	A-1, A-2	0-5	60-90	50-85	30-55	0-10	---	NP
	10-60	Gravelly sand, gravelly coarse sand, sand.	SP, SP-SM	A-1	0-5	60-90	50-85	25-50	0-10	---	NP
104* Fluvaquents											
105---------- Glenbar	0-13	Clay loam-------	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
106---------- Glenbar	0-13	Clay loam-------	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
107*---------- Glenbar	0-13	Loam----------	ML, CL-ML, CL	A-4	0	100	100	100	70-80	20-30	NP-10
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	95-100	75-95	35-45	15-30
108---------- Holtville	0-14	Loam----------	ML	A-4	0	100	100	85-100	55-95	25-35	NP-10
	14-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
109---------- Holtville	0-17	Silty clay------	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	17-24	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-35	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
	35-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP
110---------- Holtville	0-17	Silty clay------	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	17-24	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-35	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	55-85	25-35	NP-10
	35-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
111*:											
Holtville	0-10	Silty clay loam	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	10-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
Imperial	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
112	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
113	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay, clay, silty clay loam.	CH	A-7	0	100	100	100	85-95	50-70	25-45
114	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
115*:											
Imperial	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
116*:											
Imperial	0-13	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	13-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
117, 118	0-12	Loam	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
Indio	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
119*:											
Indio	0-12	Loam	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
Vint	0-10	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	25-35	---	NP
	10-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
120*	0-12	Loam	ML, CL-ML	A-4	0	100	95-100	75-85	55-65	20-30	NP-10
Laveen	12-60	Loam, very fine sandy loam.	ML, CL-ML	A-4	0	95-100	85-95	70-80	55-65	15-25	NP-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

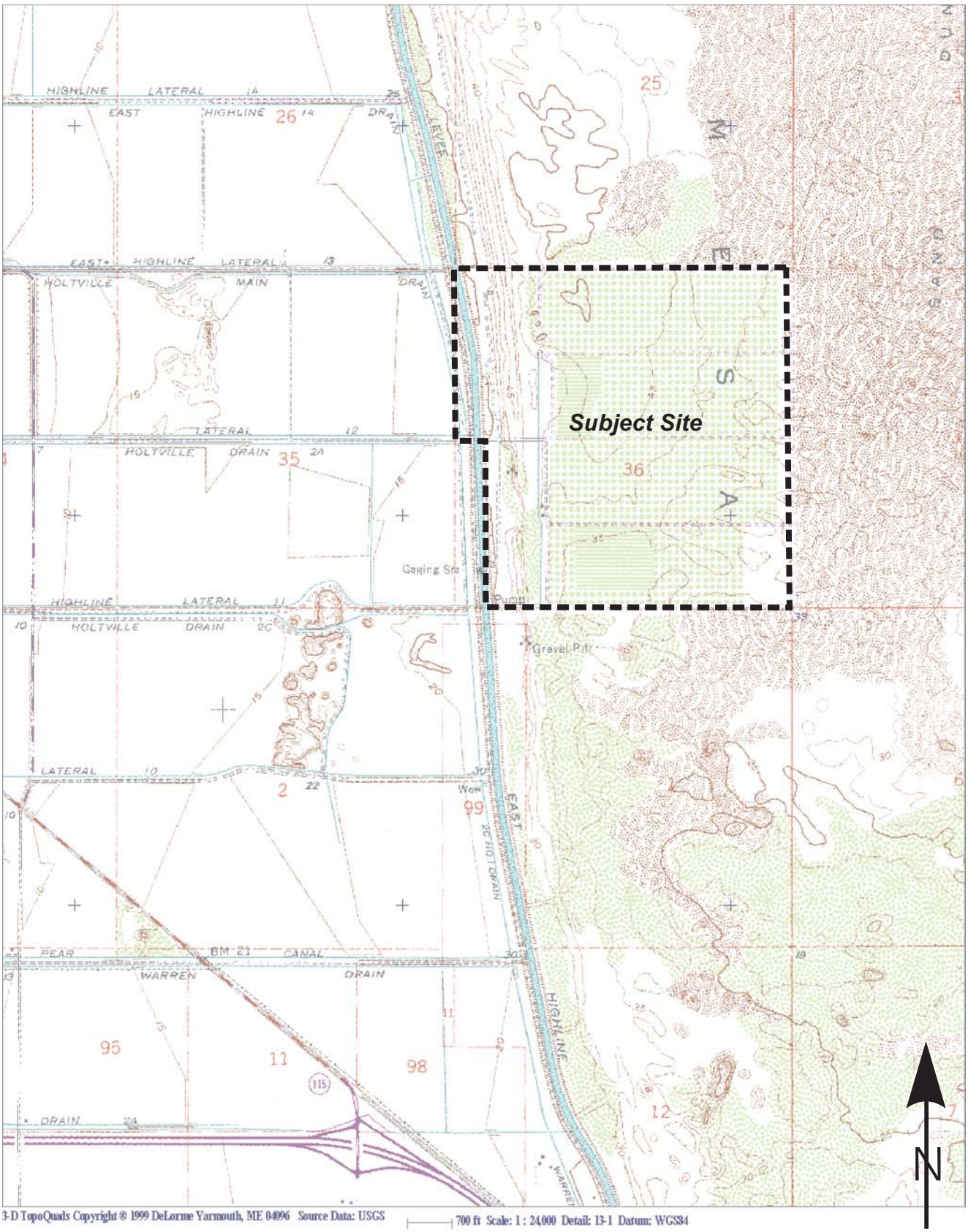
Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
121---------- Meloland	0-12	Fine sand-------	SM, SP-SM	A-2, A-3	0	95-100	90-100	75-100	5-30	---	NP
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-65	25-35	NP-10
	26-71	Clay, silty clay, silty clay loam.	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-40
122---------- Meloland	0-12	Very fine sandy loam.	ML	A-4	0	95-100	95-100	95-100	55-85	25-35	NP-10
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-70	25-35	NP-10
	26-71	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-40
123*: Meloland----------	0-12	Loam----------	ML	A-4	0	95-100	95-100	95-100	55-85	25-35	NP-10
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-70	25-35	NP-10
	26-38	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-40
	38-60	Stratified silt loam to loamy fine sand.	SM, ML	A-4	0	100	100	75-100	35-55	25-35	NP-10
Holtville---------	0-12	Loam----------	ML	A-4	0	100	100	85-100	55-95	25-35	NP-10
	12-24	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-36	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	55-85	25-35	NP-10
	36-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP
124, 125---------- Niland	0-23	Gravelly sand---	SM, SP-SM	A-2, A-3	0	90-100	70-95	50-65	5-25	---	NP
	23-60	Silty clay, clay, clay loam.	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
126---------- Niland	0-23	Fine sand-------	SM, SP-SM	A-2, A-3	0	90-100	90-100	50-65	5-25	---	NP
	23-60	Silty clay------	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
127---------- Niland	0-23	Loamy fine sand	SM	A-2	0	90-100	90-100	50-65	15-30	---	NP
	23-60	Silty clay------	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
128*: Niland----------	0-23	Gravelly sand---	SM, SP-SM	A-2, A-3	0	90-100	70-95	50-65	5-25	---	NP
	23-60	Silty clay, clay, clay loam.	CL, CH	A-7	0	100	100	85-100	80-100	40-65	20-40
Imperial----------	0-12	Silty clay------	CH	A-7	0	100	100	100	85-95	50-70	25-45
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
129*: Pits											
130, 131---------- Rositas	0-27	Sand----------	SP-SM	A-3, A-1, A-2	0	100	80-100	40-70	5-15	---	NP
	27-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
132, 133, 134, 135-Rositas	0-9	Fine sand-------	SM	A-3, A-2	0	100	80-100	50-80	10-25	---	NP
	9-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
136----------	0-4	Loamy fine sand	SM	A-1, A-2	0	100	80-100	40-85	10-35	---	NP
Rositas	4-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
137----------	0-12	Silt loam-------	ML	A-4	0	100	100	90-100	70-90	20-30	NP-5
Rositas	12-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
138*:											
Rositas----------	0-4	Loamy fine sand	SM	A-1, A-2	0	100	80-100	40-85	10-35	---	NP
	4-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
Superstition------	0-6	Loamy fine sand	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
139----------	0-6	Loamy fine sand	SM	A-2	0	100	95-100	70-85	15-25	---	NP
Superstition	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
140*:											
Torriorthents											
Rock outcrop											
141*:											
Torriorthents											
Orthids											
142----------	0-10	Loamy very fine sand.	SM, ML	A-4	0	100	100	85-95	40-65	15-25	NP-5
Vint	10-60	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
143----------	0-12	Fine sandy loam	ML, CL-ML, SM, SM-SC	A-4	0	100	100	75-85	45-55	15-25	NP-5
Vint	12-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
144*:											
Vint----------	0-10	Very fine sandy loam.	SM, ML	A-4	0	100	100	85-95	40-65	15-25	NP-5
	10-40	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
	40-60	Silty clay------	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
Indio----------	0-12	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-40	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	40-72	Silty clay------	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35

* See description of the map unit for composition and behavior characteristics of the map unit.



GS Lyon Project No.: GS2026	Topographic Map	Plate 4

APPENDIX C

Vikings Solar

Nelson Pit Road At East Highline Canal

Winterhaven, CA 92283

Inquiry Number: 6320675.11

January 06, 2021

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

01/06/21

Site Name:

Vikings Solar
Nelson Pit Road At East Highli
Winterhaven, CA 92283
EDR Inquiry # 6320675.11

Client Name:

GS Lyon Consultants
780 N. Fourth Street
El Centro, CA 92243
Contact: Steven Williams

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2016	1"=750'	Flight Year: 2016	USDA/NAIP
2012	1"=750'	Flight Year: 2012	USDA/NAIP
2009	1"=750'	Flight Year: 2009	USDA/NAIP
2006	1"=750'	Flight Year: 2006	USDA/NAIP
2002	1"=750'	Acquisition Date: January 01, 2002	USGS/DOQQ
1996	1"=750'	Acquisition Date: June 16, 1996	USGS/DOQQ
1985	1"=750'	Flight Date: July 24, 1985	USDA
1976	1"=750'	Flight Date: January 01, 1976	USGS
1953	1"=750'	Flight Date: April 07, 1953	USDA
1949	1"=750'	Flight Date: February 17, 1949	USDA
1937	1"=750'	Flight Date: November 22, 1937	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

INQUIRY #: 6320675.11

YEAR: 1937

= 750'

N

EDR

INQUIRY #: 6320675.11

YEAR: 1949

= 750'

N

EDR

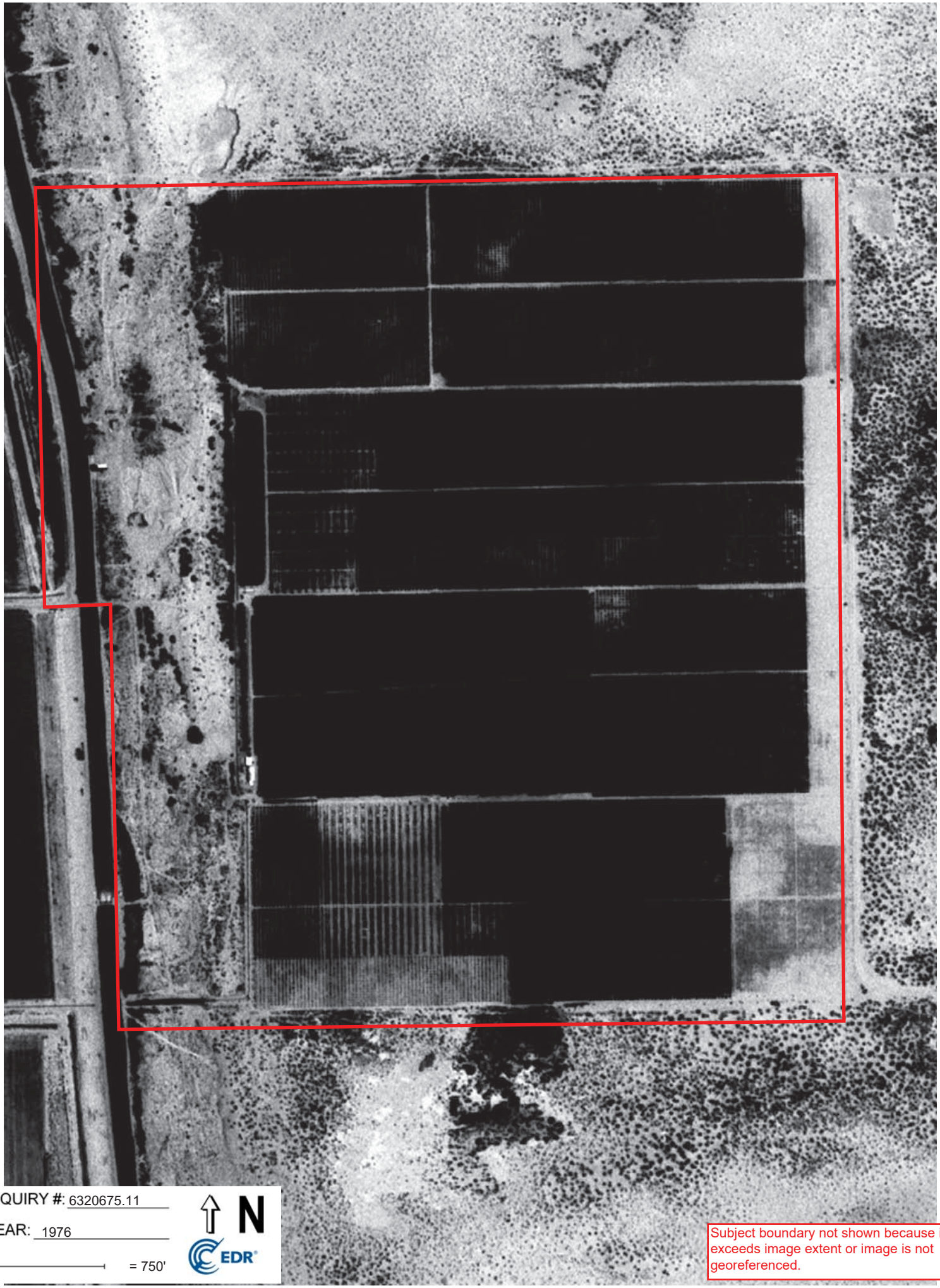
INQUIRY #: 6320675.11

YEAR: 1953

= 750'

N

EDR



INQUIRY #: 6320675.11

YEAR: 1976

= 750'

N

EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

INQUIRY #: 6320675.11

YEAR: 1985

= 750'

N

EDR

INQUIRY #: 6320675.11

YEAR: 1996

= 750'

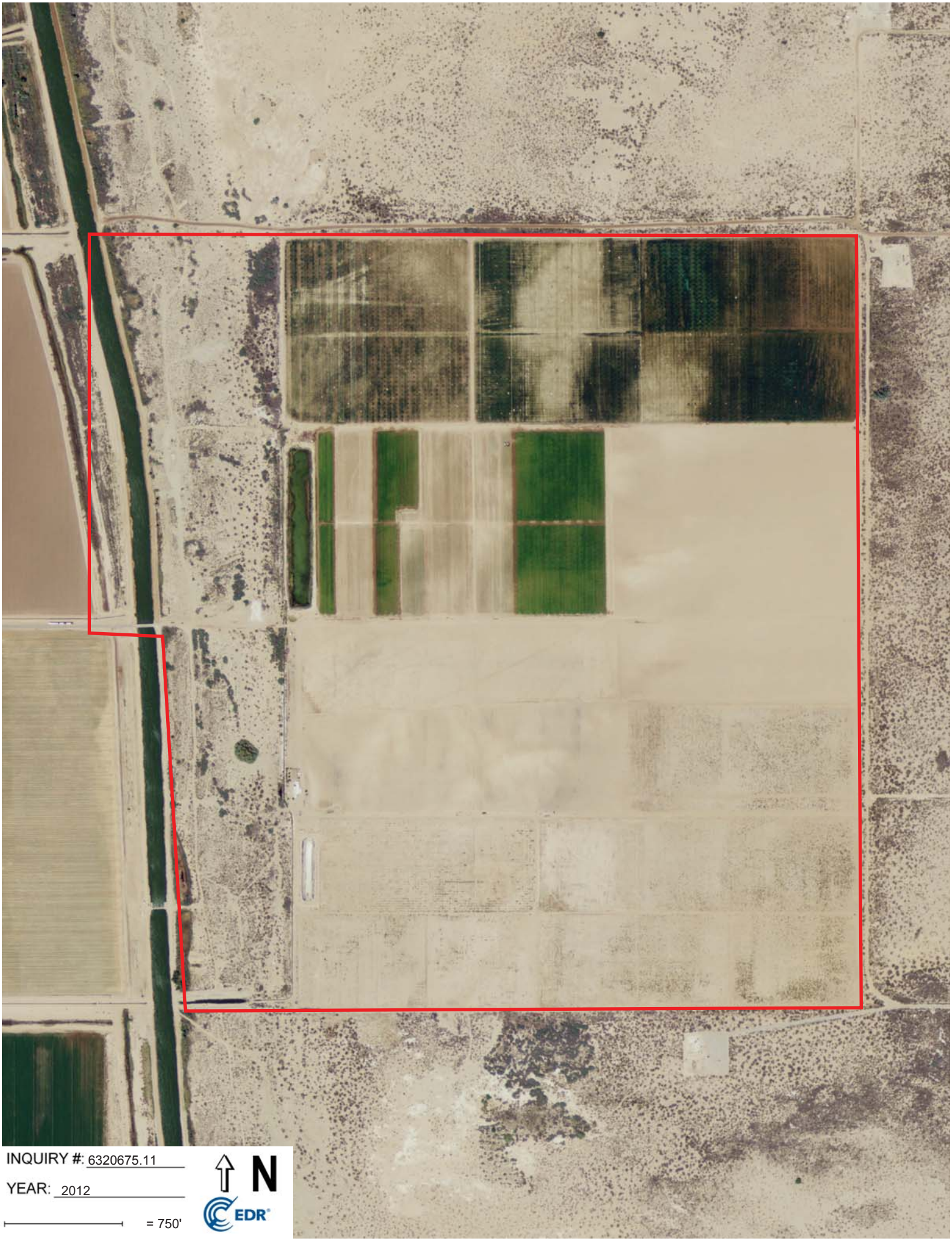
N

EDR


INQUIRY #: 6320675.11
YEAR: 2002
= 750'
N
EDR


INQUIRY #: 6320675.11
YEAR: 2006
= 750'
N
EDR


INQUIRY #: 6320675.11
YEAR: 2009
= 750'
N
EDR


INQUIRY #: 6320675.11
YEAR: 2012
= 750'
N
EDR


INQUIRY #: 6320675.11
YEAR: 2016
= 750'
N
EDR

APPENDIX D

Vikings Solar

Nelson Pit Road At East Highline Canal

Winterhaven, CA 92283

Inquiry Number: 6320675.4

January 05, 2021

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

01/05/21

Site Name:	Client Name:
Vikings Solar	GS Lyon Consultants
Nelson Pit Road At East Highli	780 N. Fourth Street
Winterhaven, CA 92283	El Centro, CA 92243
EDR Inquiry # 6320675.4	Contact: Steven Williams

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by GS Lyon Consultants were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		*Coordinates:*	
P.O.#	GS2026	**Latitude:**	32.8033 32° 48' 12" North
Project:	Vikings Solar Site	**Longitude:**	-115.27 -115° 16' 12" West
		UTM Zone:	Zone 11 North
		UTM X Meters:	661977.28
		UTM Y Meters:	3630806.16
		Elevation:	44.00' above sea level

Maps Provided:

2012
1979
1955, 1957
1954, 1957
1947
1945
1940
1907

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets

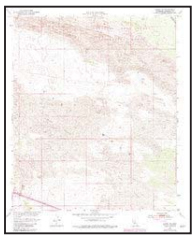
Holtville East

7.5-minute, 24000

Glamis SW

7.5-minute, 24000

1979 Source Sheets



Glamis SW

7.5-minute, 24000
Aerial Photo Revised 1976

Holtville East

7.5-minute, 24000
Aerial Photo Revised 1976

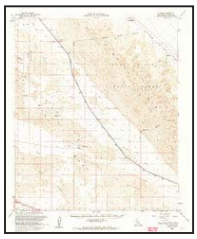
GLAMIS SW

7.5-minute, 24000

HOLTVILLE EAST

7.5-minute, 24000

1955, 1957 Source Sheets



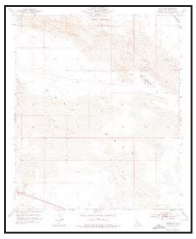
Glamis

15-minute, 62500
Aerial Photo Revised 1948

Holtville

15-minute, 62500
Aerial Photo Revised 1953

1954, 1957 Source Sheets



Glamis SW

7.5-minute, 24000

Holtville East

7.5-minute, 24000
Aerial Photo Revised 1953

Topo Sheet Key

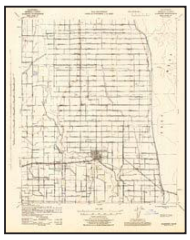
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1947 Source Sheets

ALAMORIO

15-minute, 50000

1945 Source Sheets



Alamorio

15-minute, 62500
Aerial Photo Revised 1940

1940 Source Sheets

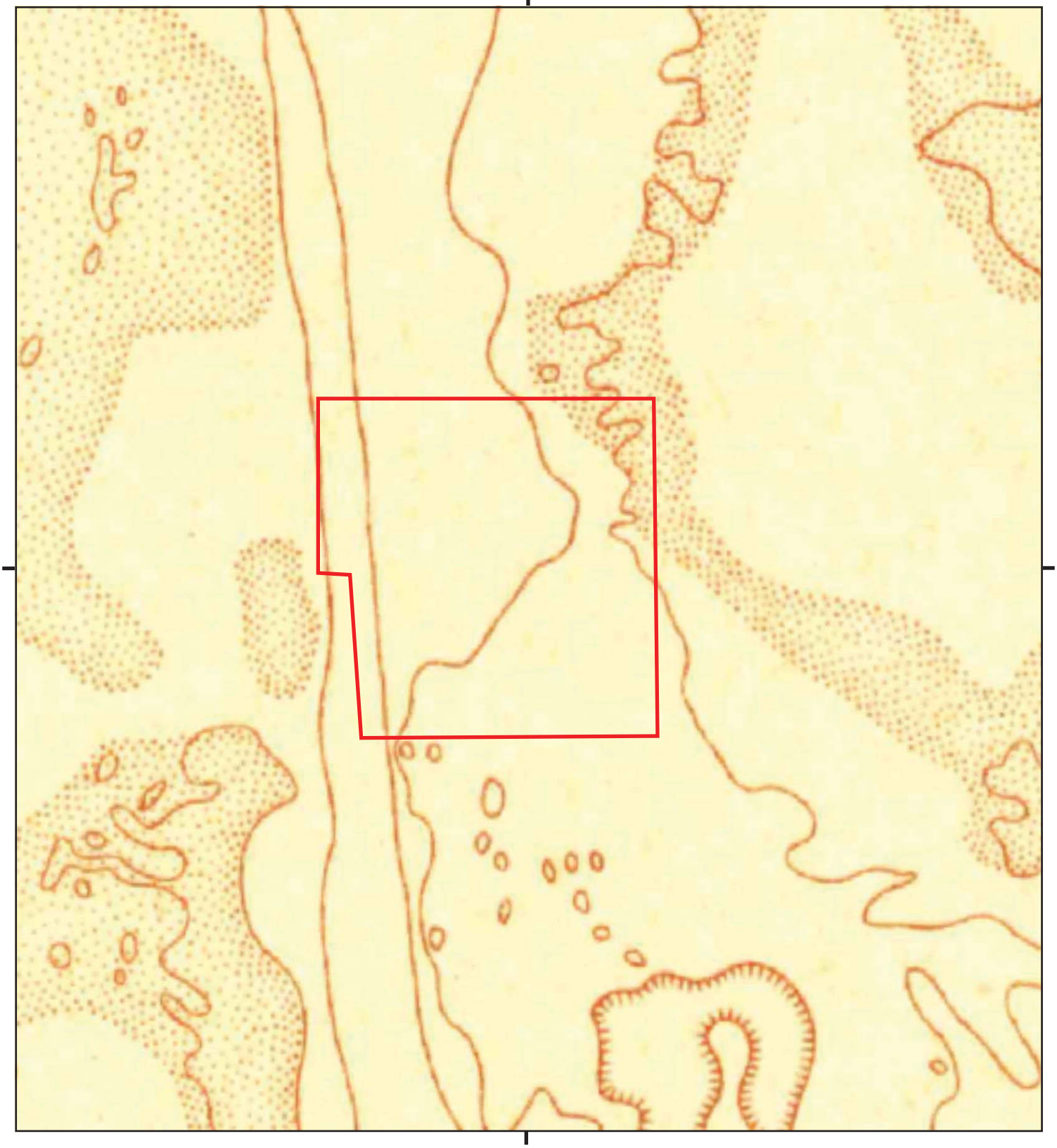
Alamorio

15-minute, 62500
Aerial Photo Revised 1940

1907 Source Sheets

Holtville

30-minute, 125000



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

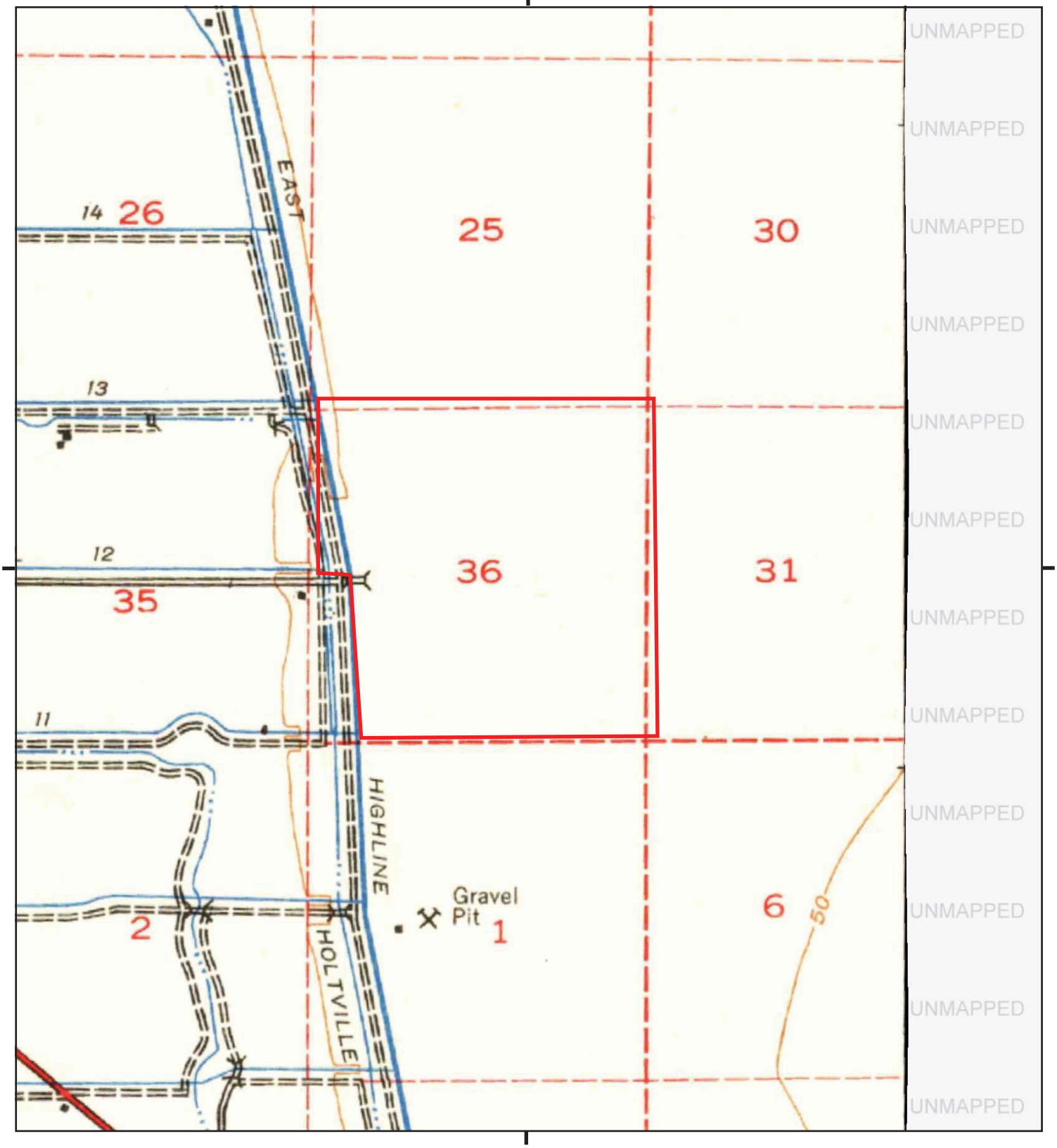
TP, Holtville, 1907, 30-minute

SITE NAME: Vikings Solar
ADDRESS: Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283
CLIENT: GS Lyon Consultants

N

Historical Topo Map

1940



This report includes information from the following map sheet(s).

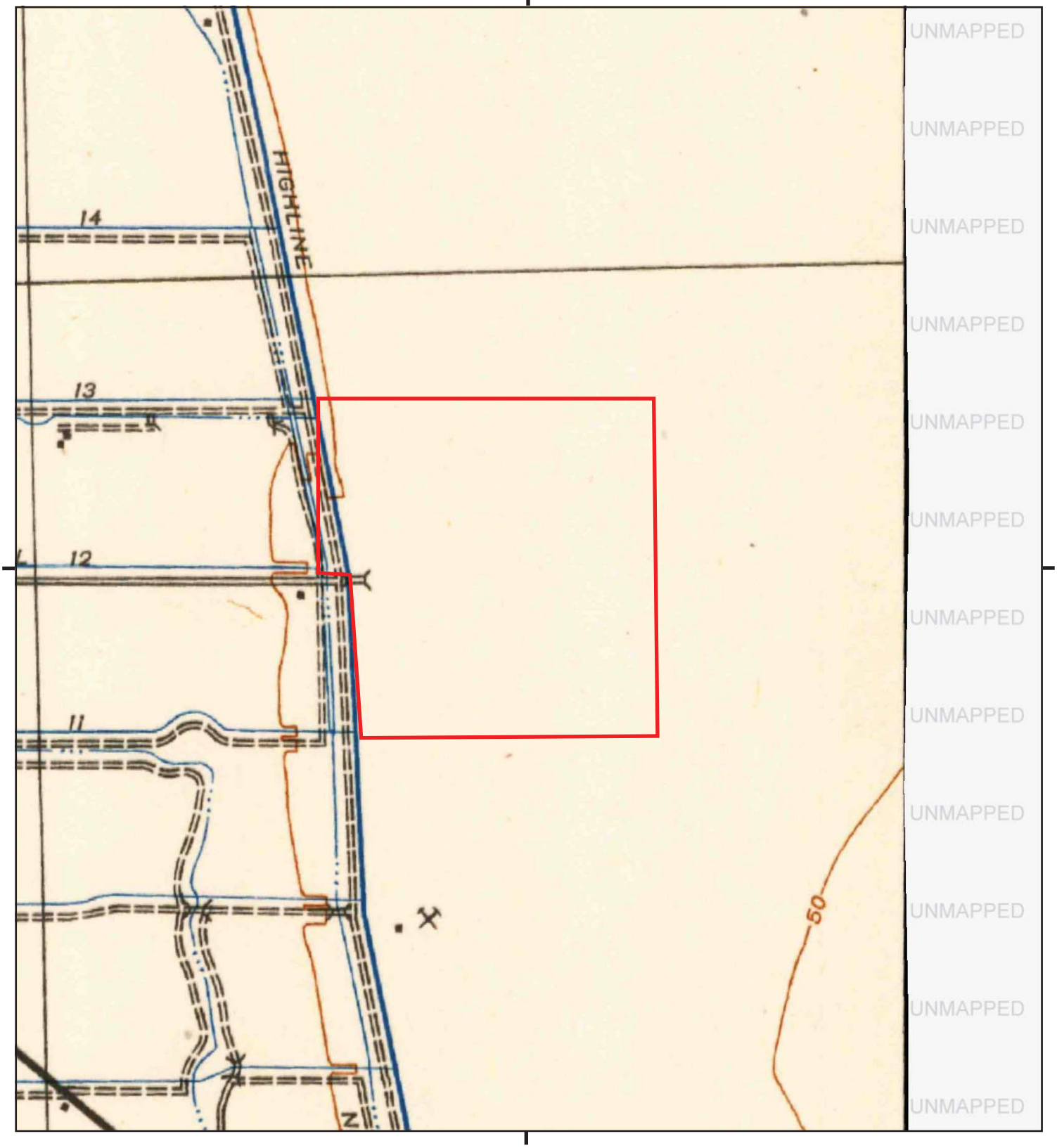
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Alamorio, 1940, 15-minute

SITE NAME: Vikings Solar
ADDRESS: Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283
CLIENT: GS Lyon Consultants

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

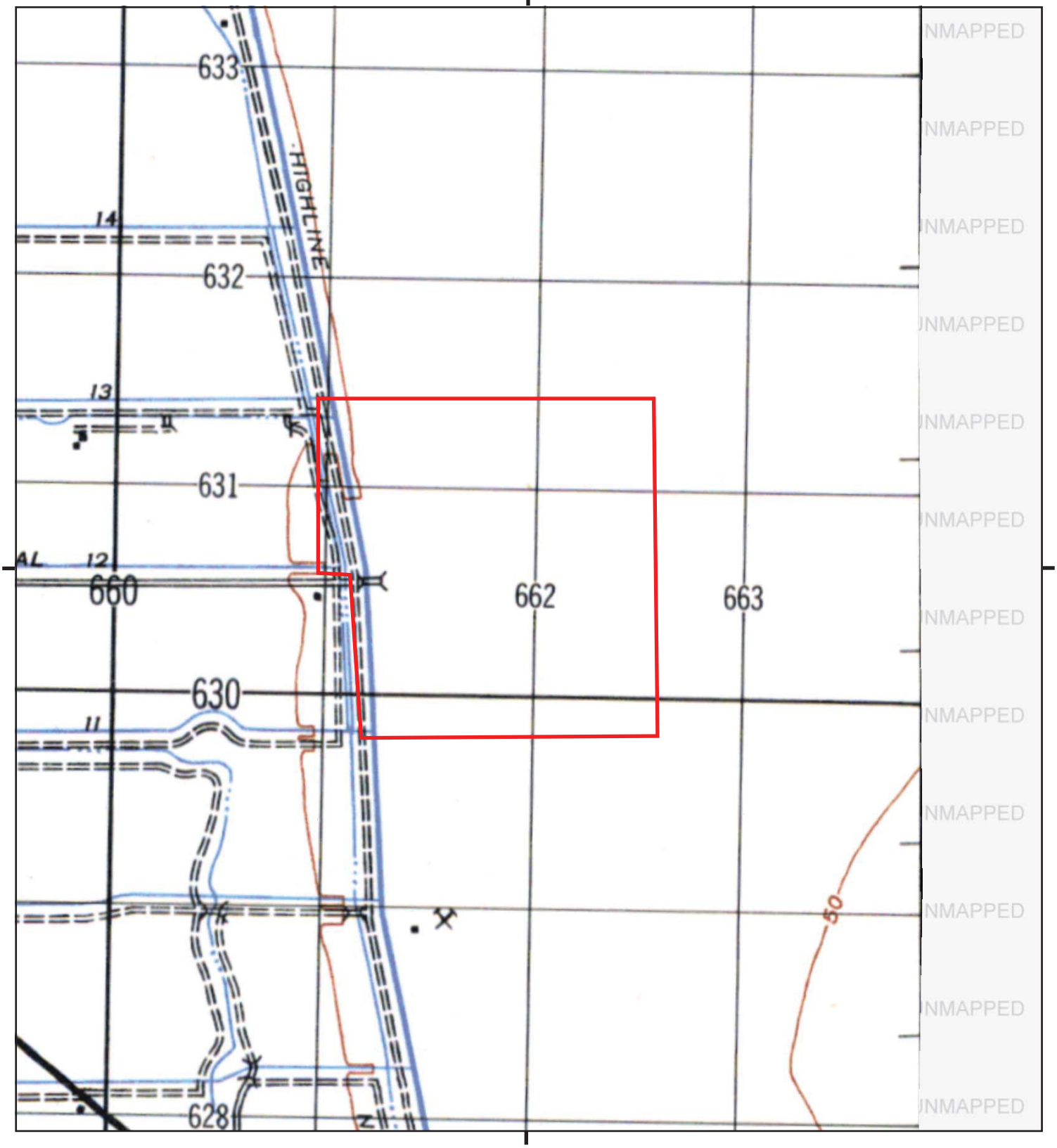
TP, Alamorio, 1945, 15-minute

SITE NAME: Vikings Solar
ADDRESS: Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283
CLIENT: GS Lyon Consultants

N

Historical Topo Map

1947



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

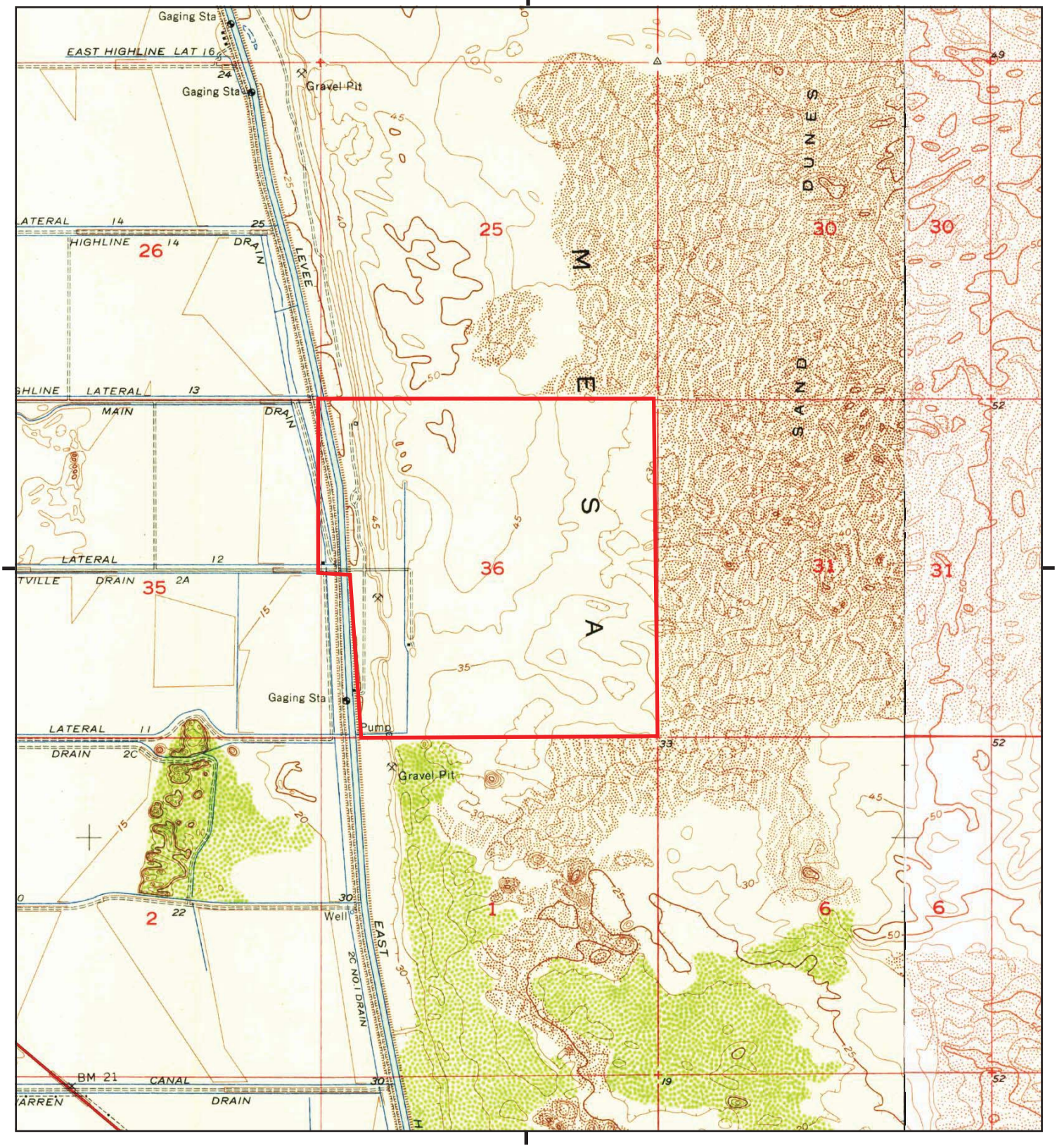
TP, ALAMORIO, 1947, 15-minute

SITE NAME: Vikings Solar
ADDRESS: Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283
CLIENT: GS Lyon Consultants

N

Historical Topo Map

1954, 1957



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

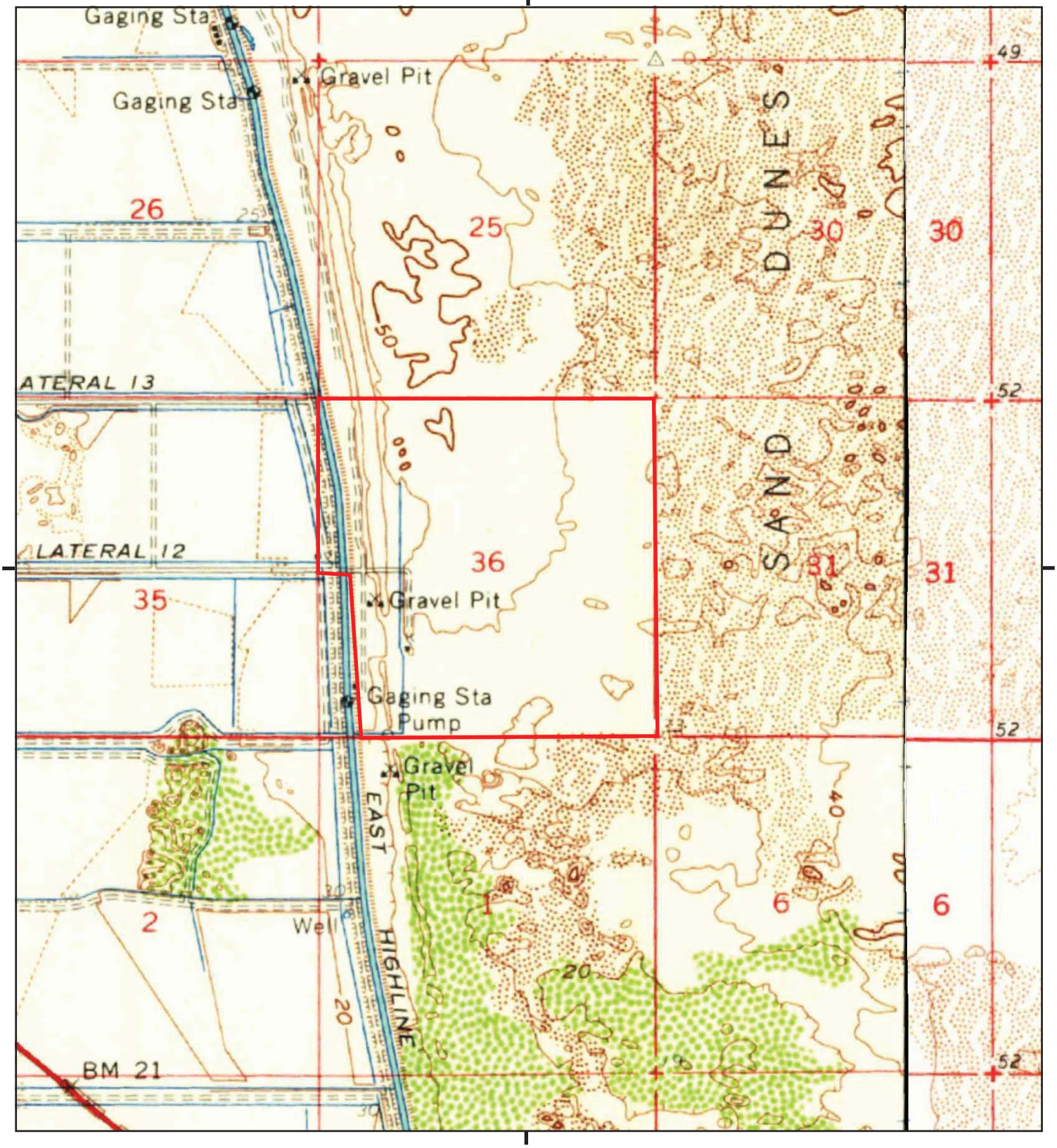
TP, Holtville East, 1957, 7.5-minute
E, Glamis SW, 1954, 7.5-minute

SITE NAME: Vikings Solar
ADDRESS: Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283
CLIENT: GS Lyon Consultants

N

Historical Topo Map

1955, 1957



This report includes information from the following map sheet(s).

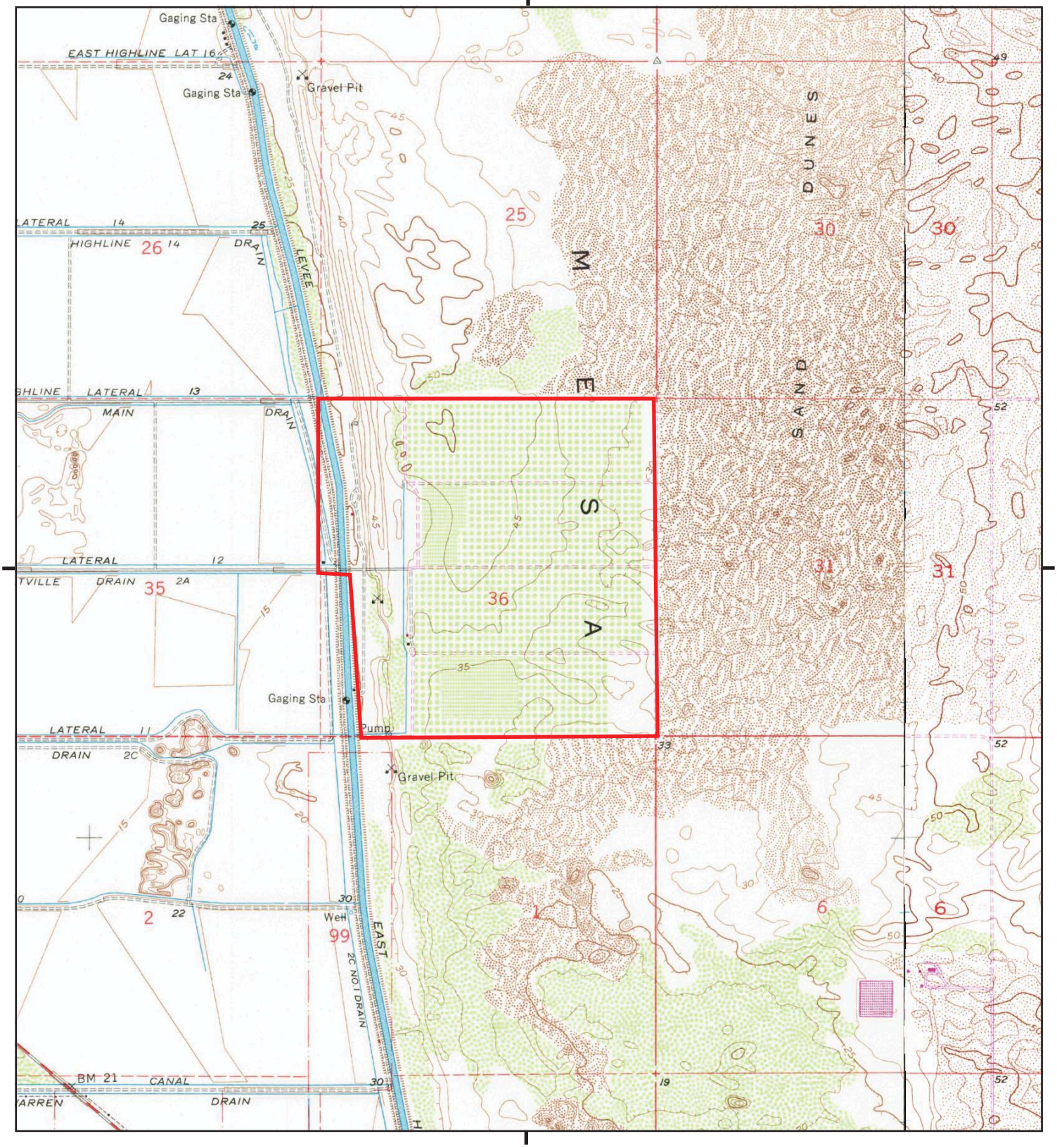
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Holtville, 1957, 15-minute
NE, Glamis, 1955, 15-minute

SITE NAME: Vikings Solar
ADDRESS: Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283
CLIENT: GS Lyon Consultants

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

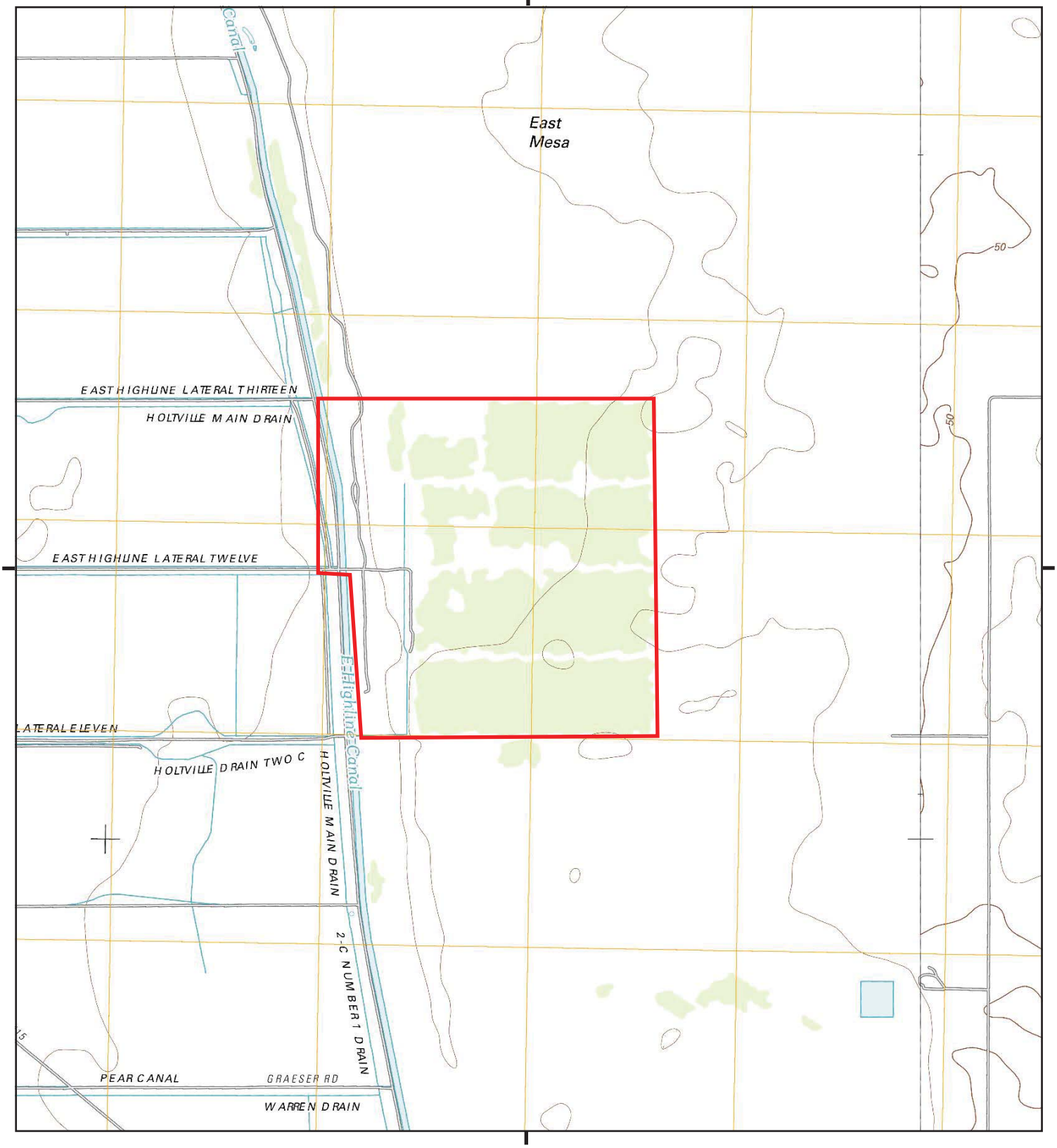
TP, Holtville East, 1979, 7.5-minute
E, Glamis SW, 1979, 7.5-minute
E, GLAMIS SW, 1979, 7.5-minute
TP, HOLTVILLE EAST, 1979, 7.5-minute

SITE NAME: Vikings Solar
ADDRESS: Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283
CLIENT: GS Lyon Consultants

N

Historical Topo Map

2012



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Holtville East, 2012, 7.5-minute
E, Glamis SW, 2012, 7.5-minute

SITE NAME: Vikings Solar
ADDRESS: Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283
CLIENT: GS Lyon Consultants

N

APPENDIX E

Vikings Solar

Nelson Pit Road At East Highline Canal

Winterhaven, CA 92283

Inquiry Number: 6320675.3

January 05, 2021

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

01/05/21

Site Name:

Vikings Solar
Nelson Pit Road At East Highlir
Winterhaven, CA 92283
EDR Inquiry # 6320675.3

Client Name:

GS Lyon Consultants
780 N. Fourth Street
El Centro, CA 92243
Contact: Steven Williams

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by GS Lyon Consultants were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 9884-4591-9BEB

PO # GS2026

Project Vikings Solar Site

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 9884-4591-9BEB

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

GS Lyon Consultants (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

APPENDIX F

Vikings Solar
Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283

Inquiry Number: 6320675.2s
January 05, 2021

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

NELSON PIT ROAD AT EAST HIGHLINE CANAL
WINTERHAVEN, CA 92283

COORDINATES

Latitude (North):	32.8033000 - 32° 48' 11.88''
Longitude (West):	115.2700000 - 115° 16' 12.00''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	661980.8
UTM Y (Meters):	3630615.8
Elevation:	44 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5622978 HOLTVILLE EAST, CA
Version Date:	2012
East Map:	5622970 GLAMIS SW, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140606, 20140805
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
NELSON PIT ROAD AT EAST HIGHLINE CANAL
WINTERHAVEN, CA 92283

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	J.B. NELSON-SOUTH PL		MINES MRDS	Higher	1 ft.
2	J B NELSON SOUTH		MINES MRDS	Lower	1 ft.
3	HIGHLINE PIT		MINES MRDS	Lower	1 ft.

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROLS..... Institutional Controls Sites List

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
UST..... Active UST Facilities
AST..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP..... Voluntary Cleanup Priority Listing
VCP..... Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT..... Waste Management Unit Database
SWRCY..... Recycler Database
HAULERS..... Registered Waste Tire Haulers Listing
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
ODI..... Open Dump Inventory

DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ---------- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---------- Delisted National Clandestine Laboratory Register
HIST Cal-Sites ---------- Historical Calsites Database
SCH ---------- School Property Evaluation Program
CDL ---------- Clandestine Drug Labs
Toxic Pits ---------- Toxic Pits Cleanup Act Sites
CERS HAZ WASTE ---------- CERS HAZ WASTE
US CDL ---------- National Clandestine Laboratory Register
PFAS ---------- PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ---------- SWEEPS UST Listing
HIST UST ---------- Hazardous Substance Storage Container Database
CERS TANKS ---------- California Environmental Reporting System (CERS) Tanks
CA FID UST ---------- Facility Inventory Database

Local Land Records

LIENS ---------- Environmental Liens Listing
LIENS 2 ---------- CERCLA Lien Information
DEED ---------- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---------- Hazardous Materials Information Reporting System
CHMIRS ---------- California Hazardous Material Incident Report System
LDS ---------- Land Disposal Sites Listing
MCS ---------- Military Cleanup Sites Listing
SPILLS 90 ---------- SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ---------- RCRA - Non Generators / No Longer Regulated
FUDS ---------- Formerly Used Defense Sites
DOD ---------- Department of Defense Sites
SCRD DRYCLEANERS ---------- State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ---------- Financial Assurance Information
EPA WATCH LIST ---------- EPA WATCH LIST
2020 COR ACTION ---------- 2020 Corrective Action Program List
TSCA ---------- Toxic Substances Control Act
TRIS ---------- Toxic Chemical Release Inventory System
SSTS ---------- Section 7 Tracking Systems
ROD ---------- Records Of Decision
RMP ---------- Risk Management Plans
RAATS ---------- RCRA Administrative Action Tracking System
PRP ---------- Potentially Responsible Parties
PADS ---------- PCB Activity Database System
ICIS ---------- Integrated Compliance Information System
FTTS ---------- FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

MLTS Material Licensing Tracking System
COAL ASH DOE Steam-Electric Plant Operation Data
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
RADINFO Radiation Information Database
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS Incident and Accident Data
CONSENT Superfund (CERCLA) Consent Decrees
INDIAN RESERV Indian Reservations
FUSRAP Formerly Utilized Sites Remedial Action Program
UMTRA Uranium Mill Tailings Sites
LEAD SMELTERS Lead Smelter Sites
US AIRS Aerometric Information Retrieval System Facility Subsystem
US MINES Mines Master Index File
ABANDONED MINES Abandoned Mines
FINDS Facility Index System/Facility Registry System
UXO Unexploded Ordnance Sites
DOCKET HWC Hazardous Waste Compliance Docket Listing
ECHO Enforcement & Compliance History Information
FUELS PROGRAM EPA Fuels Program Registered Listing
CA BOND EXP. PLAN Bond Expenditure Plan
Cortese "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings CUPA Resources List
DRYCLEANERS Cleaner Facilities
EMI Emissions Inventory Data
ENF Enforcement Action Listing
Financial Assurance Financial Assurance Information Listing
HAZNET Facility and Manifest Data
ICE ICE
HIST CORTESE Hazardous Waste & Substance Site List
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
MINES Mines Site Location Listing
MWMP Medical Waste Management Program Listing
NPDES NPDES Permits Listing
PEST LIC Pesticide Regulation Licenses Listing
PROC Certified Processors Database
Notify 65 Proposition 65 Records
UIC UIC Listing
UIC GEO UIC GEO (GEOTRACKER)
WASTEWATER PITS Oil Wastewater Pits Listing
WDS Waste Discharge System
WIP Well Investigation Program Case List
MILITARY PRIV SITES MILITARY PRIV SITES (GEOTRACKER)
PROJECT PROJECT (GEOTRACKER)
WDR Waste Discharge Requirements Listing
CIWQS California Integrated Water Quality System
CERS CERS
NON-CASE INFO NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ Well Stimulation Project (GEOTRACKER)
HWTS Hazardous Waste Tracking System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Hist Auto ---------- EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ---------- EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ---------- Recovered Government Archive Solid Waste Facilities List
RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

MINES MRDS: Mineral Resources Data System

A review of the MINES MRDS list, as provided by EDR, and dated 04/06/2018 has revealed that there are 3 MINES MRDS sites within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
J.B. NELSON-SOUTH PL		0 - 1/8 (0.000 mi.)	1	9

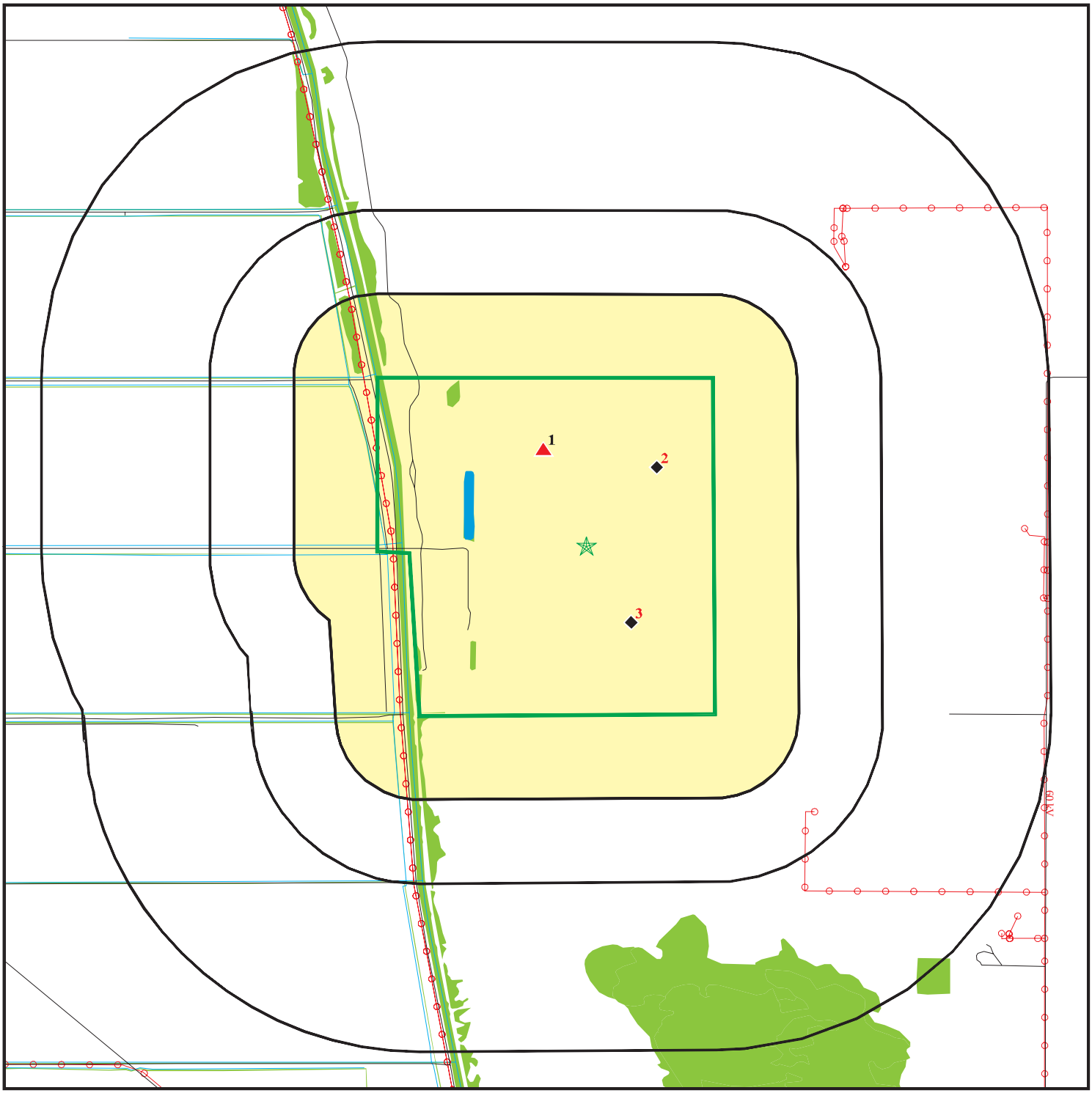
Lower Elevation	Address	Direction / Distance	Map ID	Page
J B NELSON SOUTH		0 - 1/8 (0.000 mi.)	2	10
HIGHLINE PIT		0 - 1/8 (0.000 mi.)	3	11

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
	CDL

OVERVIEW MAP - 6320675.2S

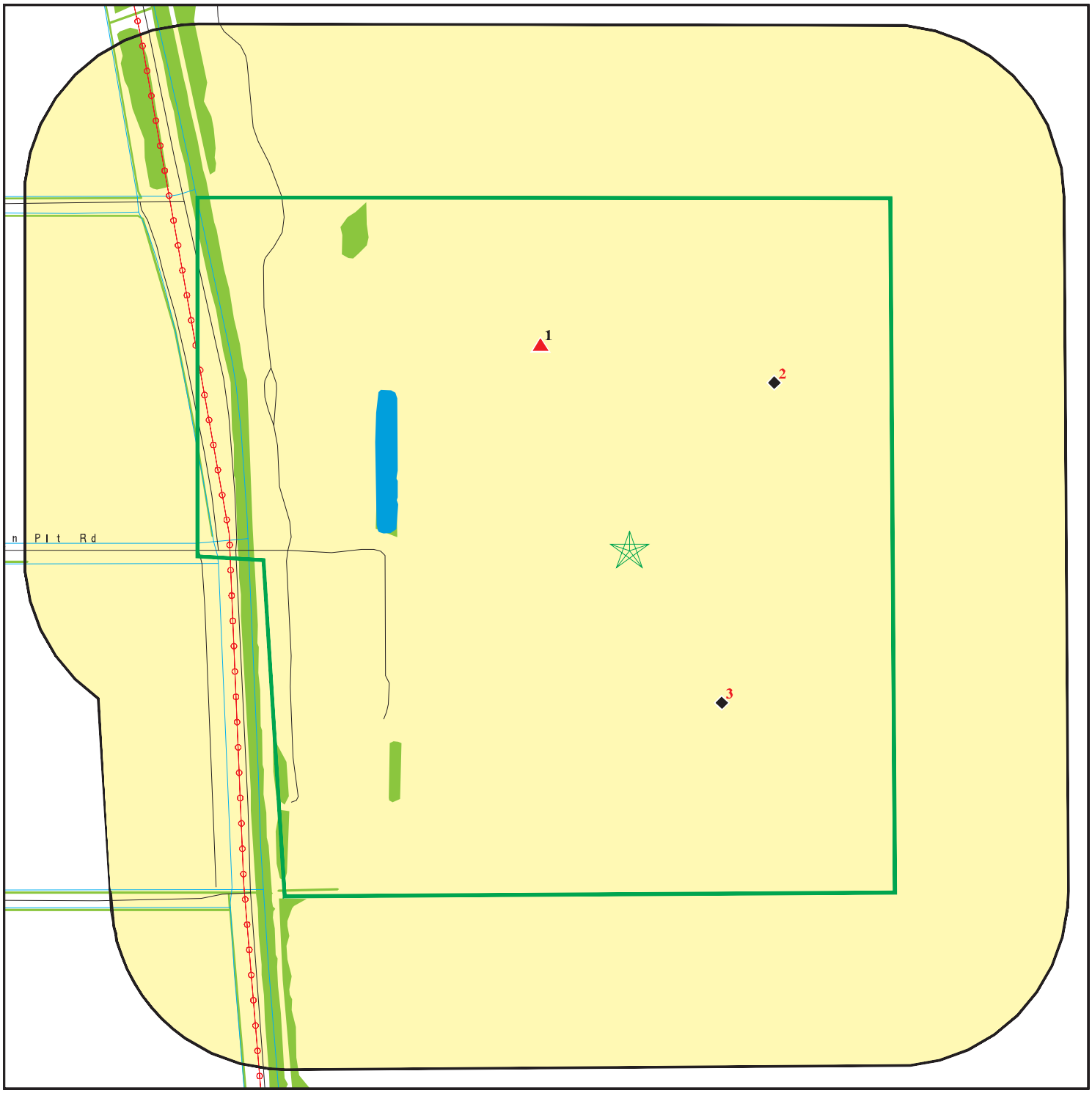


- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Vikings Solar	CLIENT:	GS Lyon Consultants
ADDRESS:	Nelson Pit Road At East Highline Canal Winterhaven CA 92283	CONTACT:	Steven Williams
		INQUIRY #:	6320675.2s
LAT/LONG:	32.8033 / 115.27	DATE:	January 05, 2021 2:37 pm

DETAIL MAP - 6320675.2S



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
Sensitive Receptors
National Priority List Sites
Dept. Defense Sites

0 1/8 1/4 1/2 Miles

Indian Reservations BIA
Power transmission lines
Special Flood Hazard Area (1%)
0.2% Annual Chance Flood Hazard
National Wetland Inventory
State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Vikings Solar	CLIENT:	GS Lyon Consultants
ADDRESS:	Nelson Pit Road At East Highline Canal Winterhaven CA 92283	CONTACT:	Steven Williams
LAT/LONG:	32.8033 / 115.27	INQUIRY #:	6320675.2s
		DATE:	January 05, 2021 2:37 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		3	NR	NR	NR	NR	3
HWTS	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	3	0	0	0	0	3

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 **J.B. NELSON-SOUTH PLANT** **MINES MRDS** **1025560644**
N/A

< 1/8
1 ft. **WINTERHAVEN, CA 92283**

Relative:
Higher

Actual:
49 ft.

MINES MRDS:

Name:	J.B. NELSON-SOUTH PLANT
Address:	Not reported
Deposit identification Number:	10064338
City,State,Zip:	WINTERHAVEN, CALIFORNIA 92283
URL:	https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10064338
MRDS Identification Number:	TC38680
MAS/MILS Identification Number:	Not reported
Region:	NA
Country:	United States
Primary Commodities:	Sand and Gravel, Construction
Secondary Commodities:	Not reported
Tertiary Commodities:	Not reported
Operation Type:	Unknown
Deposit Type:	Sedimentary
Production Size:	Y - Yes, production has occurred
Development Status:	Producer
Ore Minerals or Materials:	Gravel
Gangue Minerals or Materials:	Not reported
Other Minerals or Materials:	Not reported
Ore Body Form:	BED
Workings Type:	Surface
Mineral Deposit Model:	Not reported
Alteration Processes:	Not reported
Concentration Processes:	Not reported
Previous Names:	Not reported
Ore Controls:	Not reported
Reporter:	Unkefer, Jason
Host Rock Unit Name:	Not reported
Host Rock Type:	Not reported
Associated Rock Unit Name:	Not reported
Associated Rock Type Code:	Not reported
Structural Characteristics:	Not reported
Tectonic Setting:	Not reported
References:	Not reported
First Production Year:	Not reported
Began Before/After FPY:	Not reported
Last Production Year:	Not reported
Ended Before/After LPY:	Not reported
Year Discovered:	Not reported
Found Before/After YD:	Not reported
Production History:	Not reported
Discovery Information:	Not reported
Latitude:	32.80757
Longitude:	-115.2722

2 **J B NELSON SOUTH** **MINES MRDS** **1025622809**
N/A

< 1/8
1 ft. **WINTERHAVEN, CA 92283**

Relative:
Lower

Actual:
38 ft.

MINES MRDS:

Name:	J B NELSON SOUTH
Address:	Not reported
Deposit identification Number:	10139544
City,State,Zip:	WINTERHAVEN, CALIFORNIA 92283
URL:	https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10139544
MRDS Identification Number:	TC38680
MAS/MILS Identification Number:	0060250112
Region:	NA
Country:	United States
Primary Commodities:	Sand and Gravel, Construction
Secondary Commodities:	Not reported
Tertiary Commodities:	Not reported
Operation Type:	Placer
Deposit Type:	Not reported
Production Size:	Not reported
Development Status:	Past Producer
Ore Minerals or Materials:	Not reported
Gangue Minerals or Materials:	Not reported
Other Minerals or Materials:	Not reported
Ore Body Form:	Not reported
Workings Type:	Not reported
Mineral Deposit Model:	Not reported
Alteration Processes:	Not reported
Concentration Processes:	Not reported
Previous Names:	J B Nelson
Ore Controls:	Not reported
Reporter:	Western Field Operations Center (WFOC)
Host Rock Unit Name:	Not reported
Host Rock Type:	Not reported
Associated Rock Unit Name:	Not reported
Associated Rock Type Code:	Not reported
Structural Characteristics:	Not reported
Tectonic Setting:	Not reported
References:	Not reported
First Production Year:	Not reported
Began Before/After FPY:	Not reported
Last Production Year:	Not reported
Ended Before/After LPY:	Not reported
Year Discovered:	Not reported
Found Before/After YD:	Not reported
Production History:	Not reported
Discovery Information:	Not reported
Latitude:	32.80677
Longitude:	-115.26641

3 **HIGHLINE PIT** **MINES MRDS** **1025712268**
N/A

< 1/8 **WINTERHAVEN, CA 92283**
1 ft.

MINES MRDS:

Relative: **Lower**
Actual: **36 ft.**

Name:	HIGHLINE PIT
Address:	Not reported
Deposit identification Number:	10236473
City,State,Zip:	WINTERHAVEN, CALIFORNIA 92283
URL:	https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10236473
MRDS Identification Number:	Not reported
MAS/MILS Identification Number:	0060250312
Region:	NA
Country:	United States
Primary Commodities:	Sand and Gravel, Construction
Secondary Commodities:	Not reported
Tertiary Commodities:	Not reported
Operation Type:	Surface
Deposit Type:	Not reported
Production Size:	Not reported
Development Status:	Producer
Ore Minerals or Materials:	Not reported
Gangue Minerals or Materials:	Not reported
Other Minerals or Materials:	Not reported
Ore Body Form:	Not reported
Workings Type:	Not reported
Mineral Deposit Model:	Not reported
Alteration Processes:	Not reported
Concentration Processes:	Not reported
Previous Names:	Not reported
Ore Controls:	Not reported
Reporter:	Western Field Operations Center (WFOC)
Host Rock Unit Name:	Not reported
Host Rock Type:	Not reported
Associated Rock Unit Name:	Not reported
Associated Rock Type Code:	Not reported
Structural Characteristics:	Not reported
Tectonic Setting:	Not reported
References:	Not reported
First Production Year:	Not reported
Began Before/After FPY:	Not reported
Last Production Year:	Not reported
Ended Before/After LPY:	Not reported
Year Discovered:	Not reported
Found Before/After YD:	Not reported
Production History:	Not reported
Discovery Information:	Not reported
Latitude:	32.80007
Longitude:	-115.26771

Count: 1 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
HOLTVILLE	S107539544		NELSON PIT RD AND E HIGHLINE C		CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 12/23/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/11/2020
Number of Days to Update: 82

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/15/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 7

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 11/10/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/15/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 07/21/2020
Date Data Arrived at EDR: 09/03/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 83

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 09/03/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/03/2020
Number of Days to Update: 86

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/03/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 85

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 09/21/2020
Date Data Arrived at EDR: 09/22/2020
Date Made Active in Reports: 12/11/2020
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 09/14/2020
Date Data Arrived at EDR: 09/15/2020
Date Made Active in Reports: 12/10/2020
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/11/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/29/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 75

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 10/30/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2019
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 05/20/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/06/2020
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 08/26/2020
Date Data Arrived at EDR: 08/28/2020
Date Made Active in Reports: 11/17/2020
Number of Days to Update: 81

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81
Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/20/2020
Date Data Arrived at EDR: 09/22/2020
Date Made Active in Reports: 12/14/2020
Number of Days to Update: 83
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78
Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83
Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 08/05/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 69

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/17/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/08/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/09/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 09/21/2020
Date Data Arrived at EDR: 09/22/2020
Date Made Active in Reports: 12/14/2020
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/06/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/18/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/17/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 10/19/2020
Date Data Arrived at EDR: 10/19/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 07/24/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/14/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 34
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/30/2020
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/05/2020
Date Data Arrived at EDR: 08/10/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 59
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/12/2020
Next Scheduled EDR Contact: 01/31/2021
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 11/30/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/06/2021
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 09/24/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/27/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2020
Date Data Arrived at EDR: 10/08/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 88

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 151

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/23/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/06/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/20/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 12/02/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/04/2020
Date Data Arrived at EDR: 08/25/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 85

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 09/10/2020
Date Data Arrived at EDR: 09/15/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 66

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 11/24/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/25/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/25/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/16/2020
Date Data Arrived at EDR: 09/17/2020
Date Made Active in Reports: 12/10/2020
Number of Days to Update: 84

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/10/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 09/04/2020
Date Data Arrived at EDR: 09/15/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 66

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/08/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 10/03/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 90
Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/17/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 65
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6
Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 74
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64
Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 08/19/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 14

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 11/13/2020
Number of Days to Update: 79

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/28/2020
Date Made Active in Reports: 11/17/2020
Number of Days to Update: 81

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 06/16/2020
Date Made Active in Reports: 08/28/2020
Number of Days to Update: 73

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 12/18/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 10/13/2020
Date Data Arrived at EDR: 10/14/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/05/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 79

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/04/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/05/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 10/05/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/10/2020
Date Made Active in Reports: 10/29/2020
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/09/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/07/2020
Date Data Arrived at EDR: 12/09/2020
Date Made Active in Reports: 12/10/2020
Number of Days to Update: 1
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 12/07/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 11/19/2019
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/09/2020
Number of Days to Update: 62
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55
Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120
Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29
Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 12/30/2020
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 11/25/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System

DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 10/13/2020
Date Data Arrived at EDR: 10/14/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 78

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 06/01/2020
Number of Days to Update: 13

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 12/30/2020
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 12/15/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 12/24/2020
Number of Days to Update: 8

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 07/16/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 78

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 70

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 70

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/02/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 77

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 12/22/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/13/2020
Number of Days to Update: 75

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/14/2020
Number of Days to Update: 76

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 71

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 07/06/2020
Date Data Arrived at EDR: 07/10/2020
Date Made Active in Reports: 09/28/2020
Number of Days to Update: 80

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 10/09/2020
Date Data Arrived at EDR: 10/09/2020
Date Made Active in Reports: 12/29/2020
Number of Days to Update: 81

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/18/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42
Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 10/12/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/18/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/18/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 10/09/2020
Date Made Active in Reports: 12/29/2020
Number of Days to Update: 81
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 09/11/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 77

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/05/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 12/21/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 1

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 08/20/2020
Date Data Arrived at EDR: 08/24/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 77

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 11/15/2020
Next Scheduled EDR Contact: 03/08/3021
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 16

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 12/21/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/13/2020
Number of Days to Update: 75

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 06/10/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/19/2020
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 07/02/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 79

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 07/01/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/19/2020
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/03/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 11/24/2020
Date Data Arrived at EDR: 11/24/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 1

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/06/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/06/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 27
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/18/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 76
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/30/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/24/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/17/2020
Number of Days to Update: 78
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/30/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 08/04/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78
Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 08/04/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 82
Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/23/2020
Number of Days to Update: 84

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 82

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 75

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/11/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 08/20/2020
Date Data Arrived at EDR: 08/20/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 81

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 07/30/2020
Date Data Arrived at EDR: 07/31/2020
Date Made Active in Reports: 10/16/2020
Number of Days to Update: 77

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 09/16/2020
Number of Days to Update: 21

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 12/03/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 12/15/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 7

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 09/18/2020
Date Data Arrived at EDR: 09/22/2020
Date Made Active in Reports: 12/14/2020
Number of Days to Update: 83

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 77

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 11/17/2020
Number of Days to Update: 83

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 08/11/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 75

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/06/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 81

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 07/10/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 78
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/21/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 07/10/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 77
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/26/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/21/2020
Date Data Arrived at EDR: 12/23/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 12
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 12/20/2020
Next Scheduled EDR Contact: 04/11/2021
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/07/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 80

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 11/03/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 10/20/2020
Date Made Active in Reports: 11/02/2020
Number of Days to Update: 13

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/09/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/30/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 12/10/2019
Number of Days to Update: 69

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/03/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

VIKINGS SOLAR
NELSON PIT ROAD AT EAST HIGHLINE CANAL
WINTERHAVEN, CA 92283

TARGET PROPERTY COORDINATES

Latitude (North):	32.8033 - 32° 48' 11.88''
Longitude (West):	115.27 - 115° 16' 12.00''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	661980.8
UTM Y (Meters):	3630615.8
Elevation:	44 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5622978 HOLTVILLE EAST, CA
Version Date:	2012
East Map:	5622970 GLAMIS SW, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

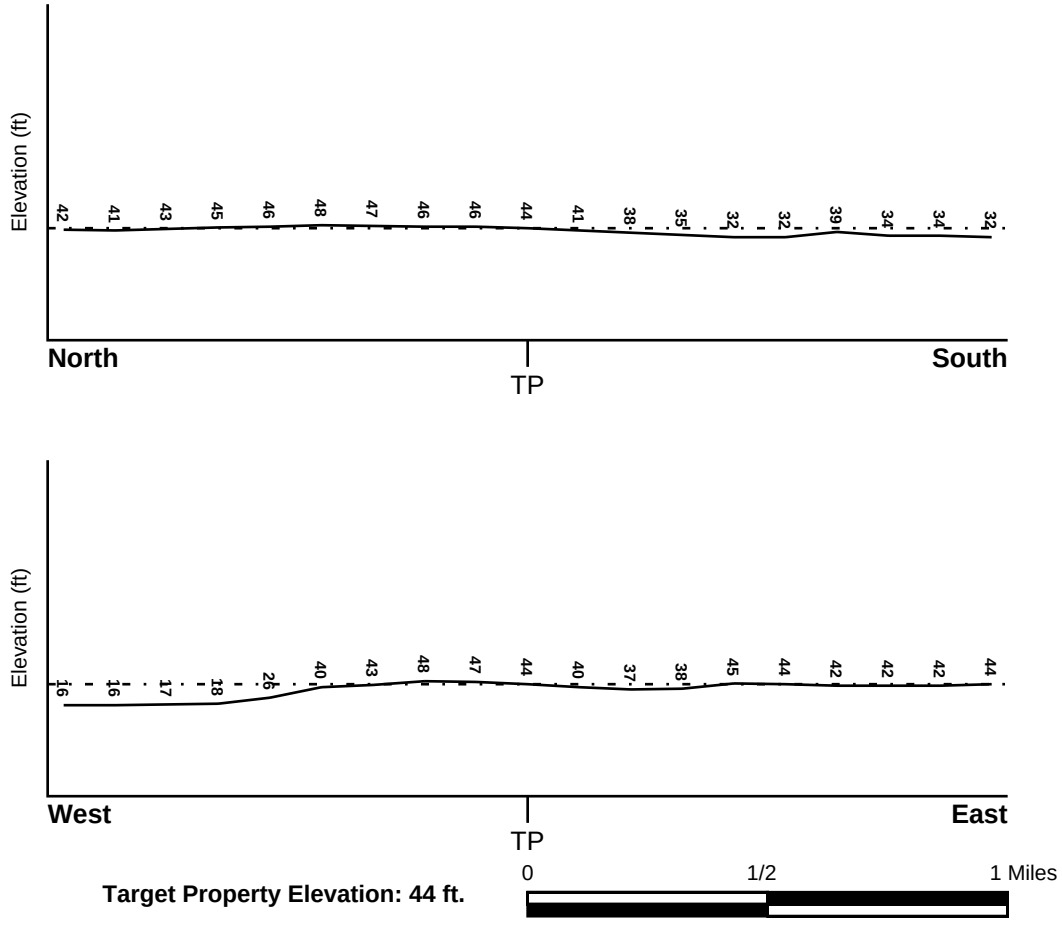
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 44 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06025C1775C	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
HOLTVILLE EAST	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

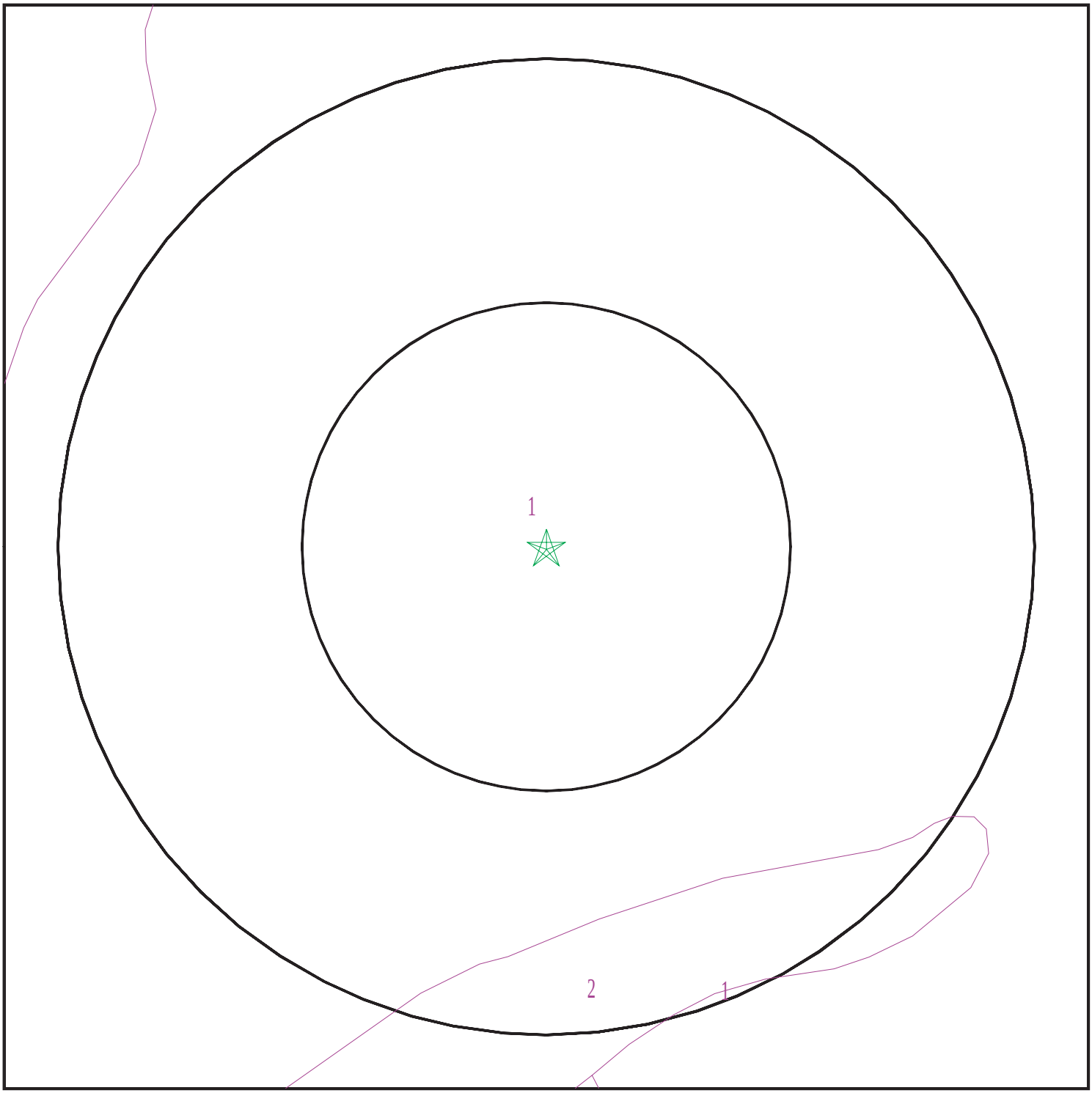
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 6320675.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Vikings Solar	CLIENT:	GS Lyon Consultants
ADDRESS:	Nelson Pit Road At East Highline Canal Winterhaven CA 92283	CONTACT:	Steven Williams
		INQUIRY #:	6320675.2s
LAT/LONG:	32.8033 / 115.27	DATE:	January 05, 2021 2:38 pm

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Rositas

Soil Surface Texture: fine sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 122 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.9
2	9 inches	59 inches	sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.9

Soil Map ID: 2

Soil Component Name: Vint

Soil Surface Texture: loamy very fine sand

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Moderately well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 122 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	loamy very fine sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.9
2	9 inches	59 inches	loamy fine sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS40000126896	1/4 - 1/2 Mile West
3	USGS40000129848	1/2 - 1 Mile SSW
4	USGS40000129844	1/2 - 1 Mile South
A6	USGS40000129866	1/2 - 1 Mile NE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A7	USGS40000129867	1/2 - 1 Mile NE
8	USGS40000129854	1/2 - 1 Mile SE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

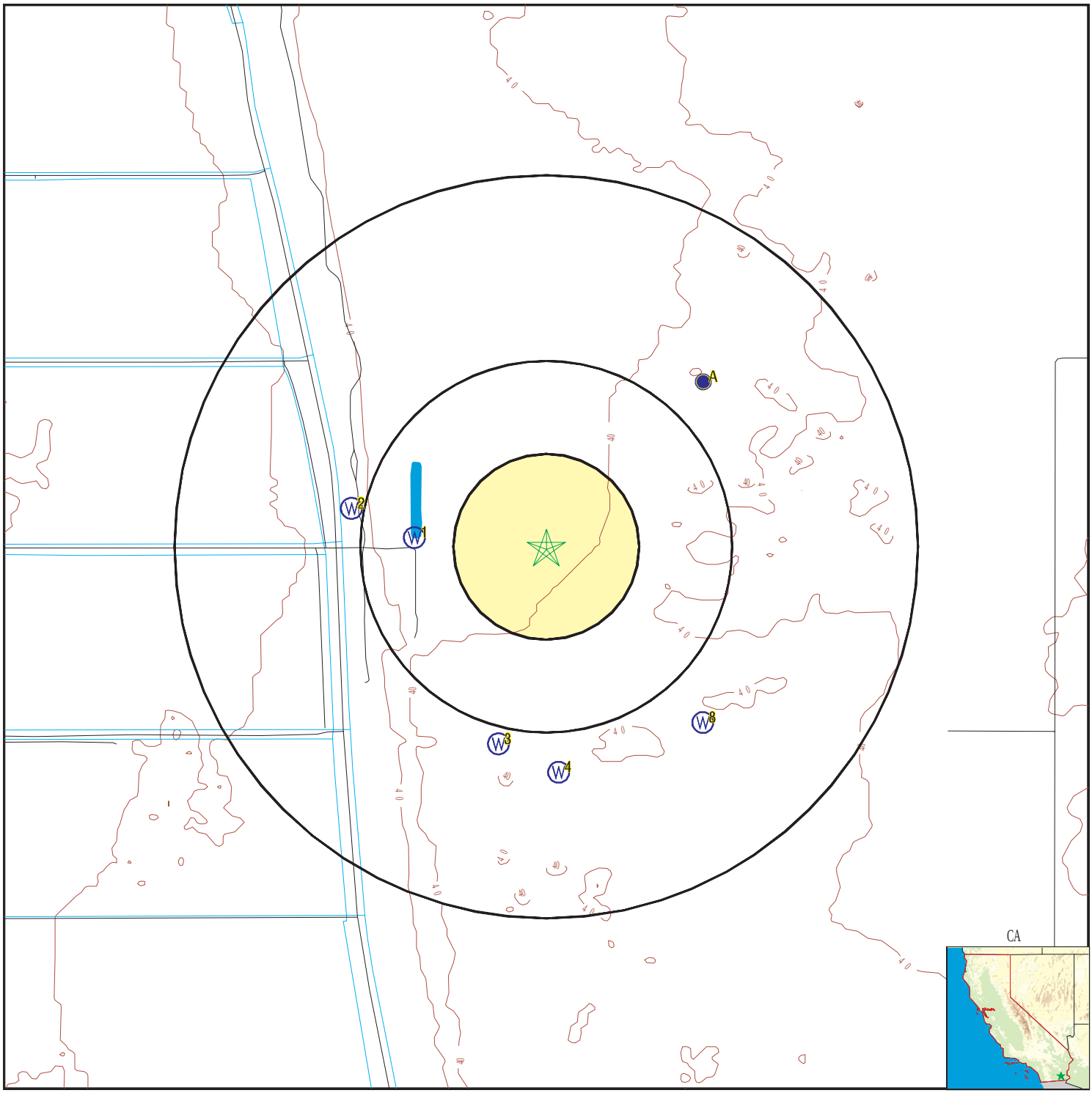
No PWS System Found

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
2	CADWR0000034572	1/2 - 1 Mile West
A5	CAUSGSN00009783	1/2 - 1 Mile NE

PHYSICAL SETTING SOURCE MAP - 6320675.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Vikings Solar	CLIENT:	GS Lyon Consultants
ADDRESS:	Nelson Pit Road At East Highline Canal Winterhaven CA 92283	CONTACT:	Steven Williams
		INQUIRY #:	6320675.2s
LAT/LONG:	32.8033 / 115.27	DATE:	January 05, 2021 2:38 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
West
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000126896**

Organization ID:	USGS-AZ	Organization Name:	USGS Arizona Water Science Center
Monitor Location:	015S016E36E001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	196107
Well Depth:	430	Well Depth Units:	ft
Well Hole Depth:	430	Well Hole Depth Units:	ft

2
West
1/2 - 1 Mile
Lower

CA WELLS **CADWR0000034572**

Well ID:	15S16E36E001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	15S16E36E001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=15S16E36E001S&store_num=		
GeoTracker Data:	Not Reported		

3
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000129848**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	016S016E01C001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

4
South
1/2 - 1 Mile
Lower

FED USGS **USGS40000129844**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	016S016E01B001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported

Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

A5
NE
1/2 - 1 Mile
Lower

CA WELLS **CAUSGSN00009783**

Well ID:	USGS-324835115154302	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-324835115154302	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-324835115154302&store_num=		
GeoTracker Data:	Not Reported		

A6
NE
1/2 - 1 Mile
Lower

FED USGS **USGS40000129866**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	015S017E31D001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

A7
NE
1/2 - 1 Mile
Lower

FED USGS **USGS40000129867**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	015S017E31D002S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

8
SE
1/2 - 1 Mile
Lower | **FED USGS** | **USGS40000129854**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	015S017E31N001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for IMPERIAL County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for IMPERIAL COUNTY, CA

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.450 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

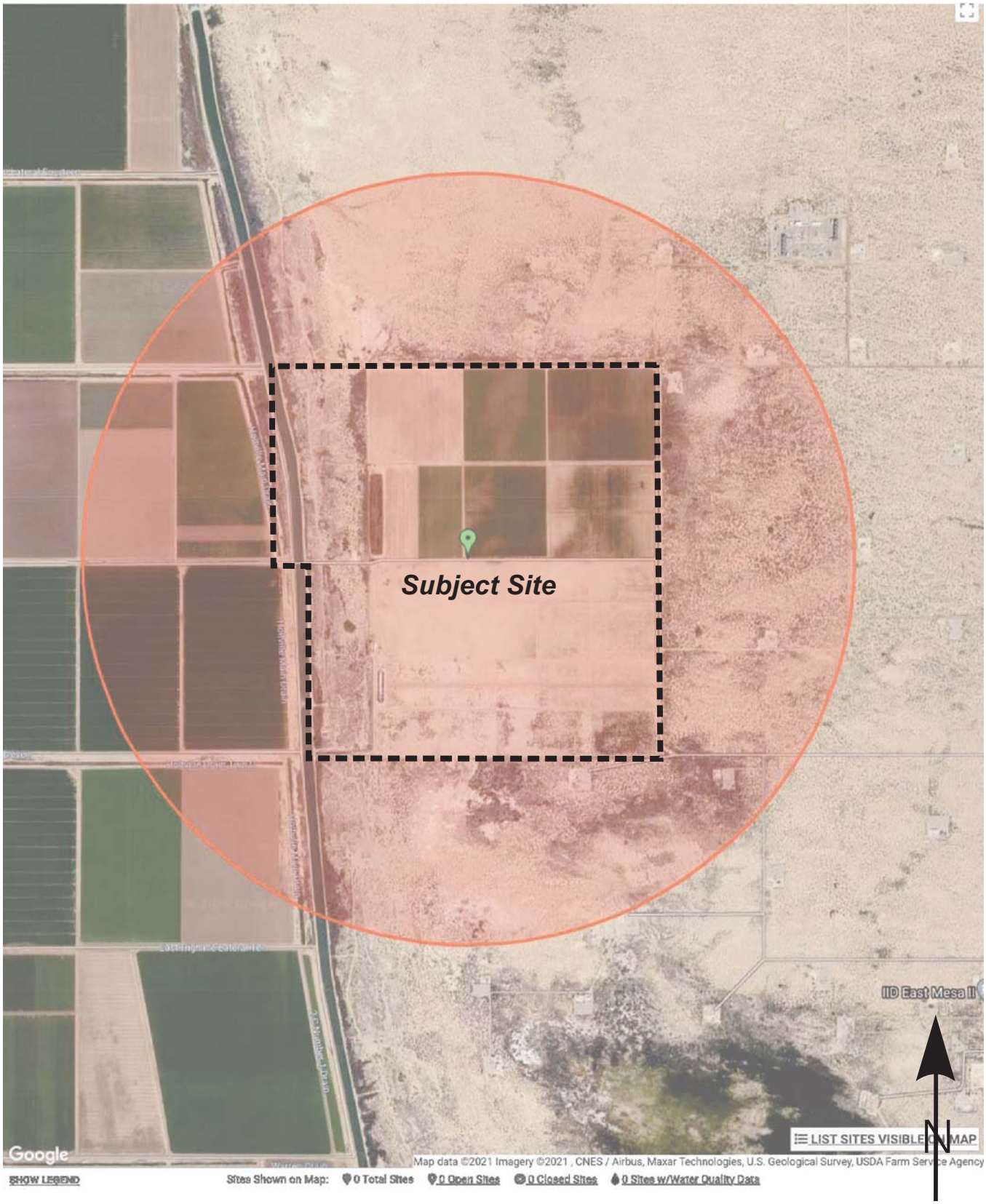
Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

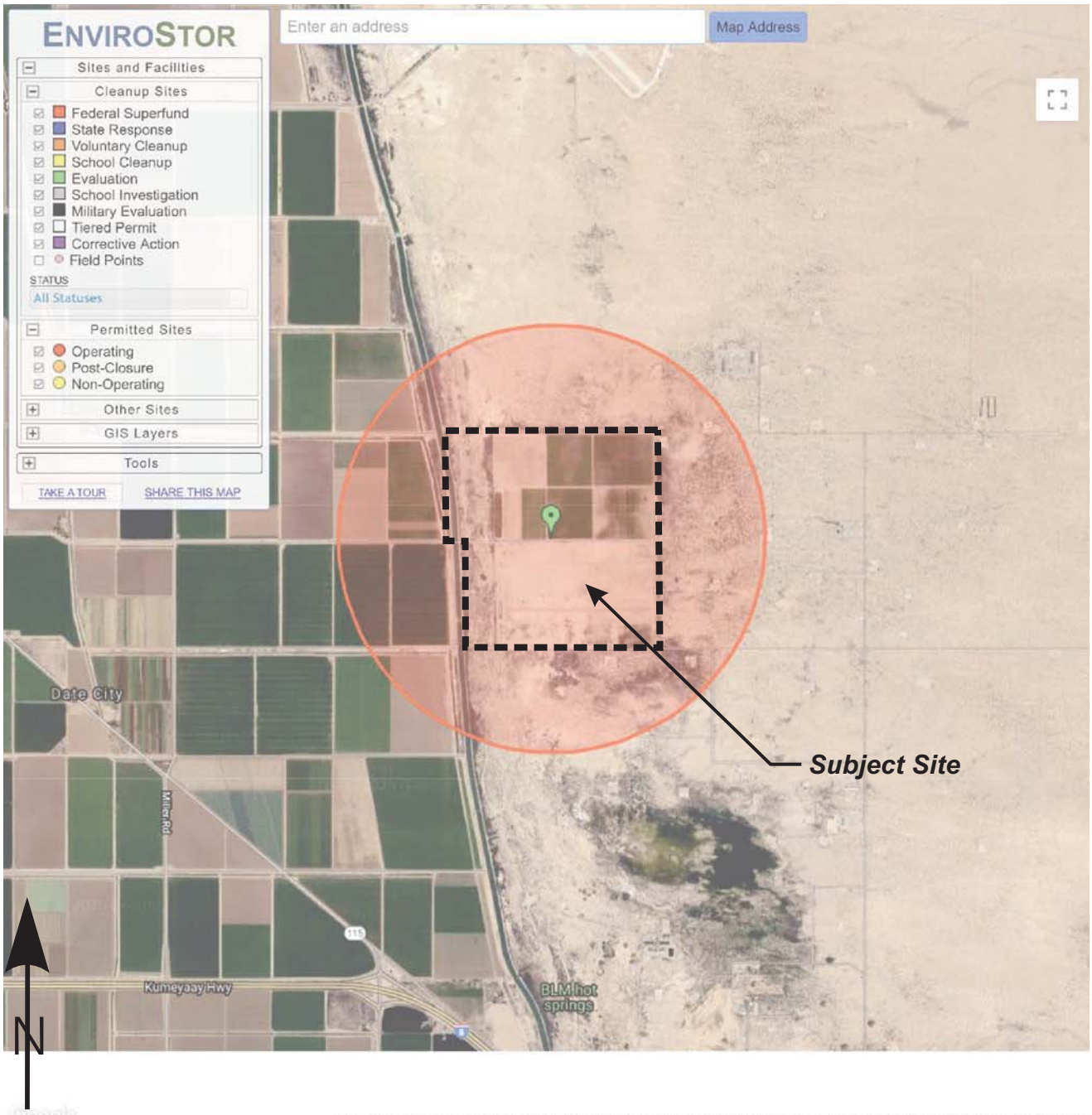
California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

APPENDIX G



GSLyon Project No.: GS2026	Geotracker Map	Plate 5



SITES FOUND IN SEARCH RADIUS — 0 SITES LISTED — EXPORT THIS LIST TO EXCEL

PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS	CITY

GS Lyon Project No.: GS2026	Envirostor Map	Plate 6

stewart title
Real partners. Real possibilities.™

Kathy Crawford
Title Officer

Stewart Title of California, Inc.
11870 Pierce St, Ste 100
Riverside, CA 92505
Phone: (951) 276-2700
Fax: (951) 346-3395
kcrawfor@stewart.com

PRELIMINARY REPORT

Order No.: 869462
Your File No.:
Buyer/Borrower Name:
Seller Name: RL&R Strahm

Property Address: APN 050-070-018, 3000 E Nelsons Pit, Holtville, CA 92250

In response to the above referenced application for a Policy of Title Insurance, Stewart Title of California, Inc. hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a Stewart Title Guaranty Company Policy or Policies of Title Insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referenced to as an Exception on Schedule B or not excluded from coverage pursuant to the printed Schedules, Conditions, and Stipulations of said Policy forms.

The printed Exceptions and Exclusions from the coverage and Limitations on covered Risks of said policy or policies are set forth in Exhibit A attached. The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than that set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. Limitations on Covered Risks applicable to the CLTA and ALTA Homeowner's Policies of Title Insurance which establish a Deductible Amount and a Maximum Dollar Limits of Liability for certain coverages are also set forth in Exhibit A. Copies of the policy forms should be read. They are available from the office which issued this report.

Please read the exceptions shown or referred to below and the exceptions and exclusions set forth in Exhibit A of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters, which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects, and encumbrances affecting title to the land.

This report, (and any supplements or amendments thereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance a binder or commitment should be requested.

Dated as of June 30, 2020 at 8:00AM	

When replying, please contact: Kathy Crawford, Title Officer

Stewart Title of California, Inc.
11870 Pierce St, Ste 100
Riverside, CA 92505
(951) 276-2700
kcrawfor@stewart.com

PRELIMINARY REPORT

The form of Policy of Title Insurance contemplated by this report is:

☐ CLTA Standard Coverage Policy

☐ CLTA/ALTA Homeowners Policy

☐ 2006 ALTA Owner's Policy

☐ 2006 ALTA Loan Policy

☐ ALTA Short Form Residential Loan Policy

☒ Preliminary Report

SCHEDULE A

The estate or interest in the land hereinafter described or referred to covered by this report is:

FEE

Title to said estate or interest at the date hereof is vested in:

RL&R Strahm, a California general partnership

LEGAL DESCRIPTION

The land referred to herein is situated in the State of California, County of Imperial, City of Holtville and described as follows:

Parcel 1:

The East half, and the East half of the Southwest quarter, and the Southeast quarter of the Northwest quarter of Section 36, Township 15 South, Range 16 East, San Bernardino Base and Meridian, County of Imperial, State of California, according to the United States Government Official Plat of Survey approved and on file in the District Land Office.

Excepting therefrom, an undivided 50% interest of all mineral and geothermal rights now held by the grantor appurtenant to the property, but without any right whatsoever to enter upon the surface of said land or any portion thereof within 500 feet vertical distance below the surface thereof, as reserved by The Nussbaum Family Limited Partnership, a California Limited Partnership, in deed recorded April 1, 2008 as Instrument No. 08-9138 of Official Records.

Parcel 2:

The Northeast quarter of the Northwest quarter of Section 36, Township 15 South, Range 16 East, San Bernardino Base and Meridian, County of Imperial, State of California, according to the a United States Government Official Plat of Survey approved and on file in the District Land Office;

Excepting therefrom all oil and mineral rights as reserved by J. Lillian Callander in deed recorded December 4, 1951 as Instrument No. 22 in Book 827, Page(s) 354 of Official Records.

Excepting therefrom, an undivided 50% interest of all mineral and geothermal rights now held by the grantor appurtenant to the property, but without any right whatsoever to enter upon the surface of said land or any portion thereof within 500 feet vertical distance below the surface thereof, as reserved by The Nussbaum Family Limited Partnership, a California Limited Partnership, in deed recorded April 1, 2008 as Instrument No. 08-9138 of Official Records.

APN: 050-070-018

Parcel 3:

A right of way for an underground tile line across the Northwest quarter of the Northwest quarter of Section 36, Township 15 South, Range 16 East, San Bernardino Base and Meridian, County of Imperial, State of California, according to the United States Government Official Plat of Survey approved and on file in the District Land Office, the centerline of which is described as follows:

Beginning at a point which is 1,262.25 feet South of the Northeast corner of the Northwest quarter of the Northwest quarter of said Section 36;
Thence North 76°22'00" West, 1,185 feet to a point in the East bank of the East Highline Canal, as now constructed across said property.

APN: 050-070-018

(End of Legal Description)

MAP

THE MAP CONNECTED HEREWITH IS BEING PROVIDED AS A COURTESY AND FOR INFORMATIONAL PURPOSES ONLY; THIS MAP SHOULD NOT BE RELIED UPON. FURTHERMORE, THE PARCELS SET OUT ON THIS MAP MAY NOT COMPLY WITH LOCAL SUBDIVISION OR BUILDING ORDINANCES. STEWART ASSUMES NO LIABILITY, RESPONSIBILITY OR INDEMNIFICATION RELATED TO THE MAPS NOR ANY MATTERS CONCERNING THE CONTENTS OF OR ACCURACY OF THE MAP.

SCHEDULE B

At the date hereof, exceptions to coverage in addition to the printed exceptions and exclusions contained in said policy or policies would be as follows:

Taxes:

A. Semi-annual water availability assessment in favor of the Imperial Irrigation District.

B. Confirmation of the tax figures must be made prior to close of escrow. Please contact the County Tax Collector prior to closing.

Exceptions:

1. Water rights, claims or title to water in or under the property, whether or not shown by the public records.

2. The lien of supplemental taxes, if any, assessed pursuant to the provisions of Chapter 3.5 (commencing with Section 75) of the Revenue and Taxation Code of the State of California.

3. Assessments for community facility districts which may exist by virtue of assessment maps or notices filed by those districts. Assessments are collected with the County Taxes.

4. Property is located within the boundary of the Imperial Irrigation District.

5. Rights or claims of easements for canals, drains, laterals, irrigation pipelines and gates not recorded in the public records.

6. Any interests (including rights of the public) in and to any portion of the property lying within roads, streets, alleys or highways.

7. Minerals of whatsoever kind, subsurface and surface substances, including but not limited to coal, lignite, oil, gas, geothermal resources, brine, uranium, clay, rock, sand and gravel in, on, under and that may be produced from the Land, together with all rights, privileges, and immunities relating thereto, whether or not appearing in the Public Records or listed in Schedule B. Stewart Title Guaranty Company makes no representation as to the present ownership of any such interests. There may be leases, grants, exceptions or reservations of interests that are not listed.

8. Matters contained in document entitled Agreement, by and between Imperial Irrigation District and W.J. Irwin and Katherine H. Irwin, recorded December 1, 1924 in Book 68 page 221 of Official Records. Affects Parcel 1.

9. Matters contained in document entitled Resolution, upon the terms therein provided, recorded July 20, 1948 in Book 713 page 531 of Official Records. Affects Parcel 1.

10. Matters contained in document entitled Resolution, upon the terms therein provided, recorded March 18, 1952 in Book 834 page 473 of Official Records. Affects Parcel 2.

11. Matters contained in document entitled Agreement, by and between Imperial Irrigation District and W.J. Irwin and Katherine H. Irwin, recorded February 28, 1955 in Book 904 page 410 of Official Records. Affects Parcel 1.

12. Matters contained in document entitled Agreement by and between Imperial Irrigation District and Vernon Nussbaum and Dinette Nussbaum, recorded February 5, 1962 in Book 1102 page 174 of Official Records.

13. Easement and rights incidental thereto for power lines and rights incidental thereto, to Imperial Irrigation District, as set forth in a document recorded June 19, 1985 as Instrument No. 50 in Book 1542 page 919 of Official Records.

14. Matters contained in Map Book 8, Page 27 of Records of Survey, which purports to show the herein described property.

15. A reservation of an undivided 50% interest of all mineral and geothermal rights now held by the grantor appurtenant to the property, but without any right whatsoever to enter upon the surface of said land or any portion thereof within 500 feet vertical distance below the surface thereof, by The Nussbaum Family Limited Partnership, a California limited partnership, in deed recorded April 1, 2008 as Instrument No. 08-9138 of Official Records.

16. Loss or damage by reason of the improvements, if any, located on the land described herein being declared to be personal property.

17. Rights or claims of parties in possession and easements or claims of easements not shown by the public records, conflicts in boundary lines, overlaps, shortage in area, encroachments, and any matters not of record which would be disclosed by an accurate survey or inspection of the property.

18. Rights of parties in possession whether or not recorded in the public record.

19. Please be advised that our search did not disclose any open deeds of trust of record. If you should have knowledge of any outstanding obligation, please contact your title officer immediately for further review.

20. In order to insure a conveyance, acquisition or encumbrance by the general partnership named below, you must provide a copy of the partnership agreement of RL&R Strahm, a California general partnership, and any amendments or modifications thereto. Additional requirements or items may be requested upon review of the required documents set forth above.

(End of Exceptions)

NOTES AND REQUIREMENTS

A. Property taxes for the fiscal year 2019 - 2020 shown below are paid. For proration purposes the amounts are:
1st Installment: $12,588.59
2nd Installment: $12,588.59
Parcel No.: 050-070-018-0
Code Area: 068005

B. There are no conveyances affecting said land, recorded with the County Recorder within 24 months of the date of this report.

C. If an Owners Policy will be requested, please be aware that unless instructed otherwise, we will issue a CLTA Standard Coverage Owners Policy. If a different form of policy is contemplated for this transaction, please advise and contact your title officer for additional requirements.

D. All Transactions - Seller(s) and Buyer(s) or Borrowers are provided as attachments Stewart Title's document entitled "Acknowledgement of Receipt, Understanding and Approval of STG Privacy Notice for Stewart Title Companies and Stewart's Affiliated Business Arrangement Disclosure Statement" along with those individually named documents for your review and acknowledgment prior to closing.

E. All Transactions - Buyer(s)/Seller(s)/Borrower(s) are provided Stewart Title's Preliminary report for review and acknowledgment prior to closing. Buyer(s) approval to include the Preliminary Report items that remain as exceptions to the title policy.

F. Purchase Transaction Only-Seller(s)/Owner(s) are provided Stewart Title's Owner Affidavit and Indemnity for completion prior to closing.

CALIFORNIA "GOOD FUNDS" LAW

California Insurance Code Section 12413.1 regulates the disbursement of escrow and sub-escrow funds by title companies. The law requires that funds be deposited in the title company escrow account and available for withdrawal prior to disbursement. Funds received by Stewart Title of California, Inc. via wire transfer may be disbursed upon receipt. Funds received via cashier's checks or teller checks drawn on a California Bank may be disbursed on the next business day after the day of deposit. If funds are received by any other means, recording and/or disbursement may be delayed, and you should contact your title or escrow officer. All escrow and sub-escrow funds received will be deposited with other escrow funds in one or more non-interest bearing escrow accounts in a financial institution selected by Stewart Title of California, Inc.. Stewart Title of California, Inc. may receive certain direct or indirect benefits from the financial institution by reason of the deposit of such funds or the maintenance of such accounts with the financial institution, and Stewart Title of California, Inc. shall have no obligation to account to the depositing party in any manner for the value of, or to pay to such party, any benefit received by Stewart Title of California, Inc.. Such benefits shall be deemed additional compensation to Stewart Title of California, Inc. for its services in connection with the escrow or sub-escrow.

If any check submitted is dishonored upon presentation for payment, you are authorized to notify all principals and/or their respective agents of such nonpayment.

EXHIBIT "A"

LEGAL DESCRIPTION

Order No.: 869462
Escrow No.: 869462

The land referred to herein is situated in the State of California, County of Imperial, City of Holtville and described as follows:

Parcel 1:

The East half, and the East half of the Southwest quarter, and the Southeast quarter of the Northwest quarter of Section 36, Township 15 South, Range 16 East, San Bernardino Base and Meridian, County of Imperial, State of California, according to the United States Government Official Plat of Survey approved and on file in the District Land Office.

Excepting therefrom, an undivided 50% interest of all mineral and geothermal rights now held by the grantor appurtenant to the property, but without any right whatsoever to enter upon the surface of said land or any portion thereof within 500 feet vertical distance below the surface thereof, as reserved by The Nussbaum Family Limited Partnership, a California Limited Partnership, in deed recorded April 1, 2008 as Instrument No. 08-9138 of Official Records.

Parcel 2:

The Northeast quarter of the Northwest quarter of Section 36, Township 15 South, Range 16 East, San Bernardino Base and Meridian, County of Imperial, State of California, according to the a United States Government Official Plat of Survey approved and on file in the District Land Office;

Excepting therefrom all oil and mineral rights as reserved by J. Lillian Callander in deed recorded December 4, 1951 as Instrument No. 22 in Book 827, Page(s) 354 of Official Records.

Excepting therefrom, an undivided 50% interest of all mineral and geothermal rights now held by the grantor appurtenant to the property, but without any right whatsoever to enter upon the surface of said land or any portion thereof within 500 feet vertical distance below the surface thereof, as reserved by The Nussbaum Family Limited Partnership, a California Limited Partnership, in deed recorded April 1, 2008 as Instrument No. 08-9138 of Official Records.

APN: 050-070-018

Parcel 3:

A right of way for an underground tile line across the Northwest quarter of the Northwest quarter of Section 36, Township 15 South, Range 16 East, San Bernardino Base and Meridian, County of Imperial, State of California, according to the United States Government Official Plat of Survey approved and on file in the District Land Office, the centerline of which is described as follows:

Beginning at a point which is 1,262.25 feet South of the Northeast corner of the Northwest quarter of the Northwest quarter of said Section 36;
Thence North 76°22'00" West, 1,185 feet to a point in the East bank of the East Highline Canal, as now constructed across said property.

APN: 050-070-018

(End of Legal Description)

AFFILIATED BUSINESS ARRANGEMENT DISCLOSURE STATEMENT

Date: August 3, 2020

File No.: 869462

Property: APN 050-070-018, 3000 E Nelsons Pit, Holtville, CA 92250

From: Stewart Title of California, Inc.

This is to give you notice that Stewart Title of California, Inc. ("Stewart Title") has a business relationship with Stewart Solutions, LLC, DBA – Stewart Specialty Insurance Services, LLC ("Stewart Insurance"). Stewart Information Services Corporation owns 100% of Stewart Insurance and . Because of this relationship, this referral may provide Stewart Title a financial or other benefit.

Set forth below is the estimated charge or range of charges for the settlement services listed. You are NOT required to use the listed provider(s) as a condition for purchase, sale, or refinance of the subject Property. THERE ARE FREQUENTLY OTHER SETTLEMENT SERVICE PROVIDERS AVAILABLE WITH SIMILAR SERVICES. YOU ARE FREE TO SHOP AROUND TO DETERMINE THAT YOU ARE RECEIVING THE BEST SERVICES AND THE BEST RATE FOR THESE SERVICES.

Stewart Insurance Settlement Service	***Charge or range of charges***
Hazard Insurance	$400.00 to $6,500.00
Home Warranty	$255.00 to $ 780.00
Natural Hazard Disclosure Report	$ 42.50 to $ 149.50

ACKNOWLEDGEMENT OF RECEIPT, UNDERSTANDING AND APPROVAL OF STEWART TITLE GUARANTY COMPANY PRIVACY NOTICE FOR STEWART TITLE COMPANIES AND AFFILIATED BUSINESS ARRANGEMENT DISCLOSURE STATEMENT

The undersigned hereby acknowledge receipt of the Stewart Title Guaranty Company Privacy Notice for Stewart Title Companies and the Affiliated Business Arrangement Disclosure Statement that apply to this transaction. The undersigned further acknowledge that he/she/they have received, read, understand and accept these documents in connection with the above described transaction.

The undersigned have received a copy of this acknowledgement as evidenced by the signature below.

_____
RL&R Strahm

TBD

By:_____

CALIFORNIA LAND TITLE ASSOCIATION

STANDARD COVERAGE POLICY – 1990
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building or zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien, or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.

2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.

3. Defects, liens, encumbrances, adverse claims or other matters:
   a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
   b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   c) resulting in no loss or damage to the insured claimant;
   d) attaching or created subsequent to Date of Policy; or
   e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.

4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable doing business laws of the state in which the land is situated.

5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.

6. Any claim, which arises out of the transaction vesting in the insured the estate of interest insured by this policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART I

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

6. Any lien or right to a lien for services, labor or material unless such lien is shown by the Public Records at Date of Policy.

CLTA/ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE (12-02-13)
EXCLUSIONS

In addition to the Exceptions in Schedule B, You are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of those portions of any law or government regulation concerning:
   a. building;
   b. zoning;
   c. land use;
   d. improvements on the Land;
   e. land division;
   f. environmental protection.

   This Exclusion does not limit the coverage described in Covered Risk 8.a., 14, 15, 16, 18, 19, 20, 23 or 27.

2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not limit the coverage described in Covered Risk 14 or 15.
3. The right to take the Land by condemning it. This Exclusion does not limit the coverage described in Covered Risk 17.

4. Risks:
   a. that are created, allowed, or agreed to by You, whether or not they appear in the Public Records;
   b. that are Known to You at the Policy Date, but not to Us, unless they are recorded in the Public Records at the Policy Date;
   c. that result in no loss to You; or
   d. that first occur after the Policy Date - this does not limit the coverage described in Covered Risk 7, 8.e., 25, 26, 27 or 28.

5. Failure to pay value for Your Title.

6. Lack of a right:
   a. to any land outside the area specifically described and referred to in paragraph 3 of Schedule A; and
   b. in streets, alleys, or waterways that touch the Land.

   This Exclusion does not limit the coverage described in Covered Risk 11 or 21.

7. The transfer of the Title to You is invalid as a preferential transfer or as a fraudulent transfer or conveyance under federal bankruptcy, state insolvency, or similar creditors' rights laws.

8. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.

9. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

LIMITATIONS ON COVERED RISKS

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows:
* For Covered Risk 16, 18, 19, and 21 Your Deductible Amount and Our Maximum Dollar Limit of Liability shown in Schedule A. The deductible amounts and maximum dollar limits shown on Schedule A are as follows:

	Your Deductible Amount	Our Maximum Dollar Limit of Liability
Covered Risk 16:	1% of Policy Amount or $2,500.00 (whichever is less)	$10,000.00
Covered Risk 18:	1% of Policy Amount or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 19:	1% of Policy Amount or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 21:	1% of Policy Amount or $2,500.00 (whichever is less)	$5,000.00

2006 ALTA LOAN POLICY (06-17-06)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.

4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.

5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.

6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.

7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

Except as provided in Schedule B - Part II, this policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses, that arise by reason of:

PART I

1. (a) taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
   (b) proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the Public Records.

4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.

5. (a) unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

6. Any lien or right to a lien for services, labor or material unless such lien is shown by the Public Records at Date of Policy.

PART II

In addition to the matters set forth in Part I of this Schedule, the Title is subject to the following matters, and the Company insures against loss or damage sustained in the event that they are not subordinate to the lien of the Insured Mortgage:

2006 ALTA OWNER'S POLICY (06-17-06)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.

4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.

5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and that are not shown by the Public Records.

5. (a) unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

6. Any lien or right to a lien for services, labor or material unless such lien is shown by the Public Records at Date of Policy..

ALTA EXPANDED COVERAGE RESIDENTIAL LOAN POLICY – ASSESSMENTS PRIORITY (04-02-15)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys fees or expenses which arise by reason of:

1. a. Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions or location of any improvement now or hereafter erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection

   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
   b. Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims or other matters:

   (a) created, suffered, assumed or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting In no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 16, 17, 18, 19, 20, 21, 22, 23, 24, 27 or 28); or
   (e) resulting in loss or damage which would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.

4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing- business laws of the state where the Land is situated.

5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury, or any consumer credit protection or truth-in-lending law. This Exclusion does not modify or limit the coverage provided in Covered Risk 26.

6. Any claim of invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage as to Advances or modifications made after the Insured has Knowledge that the vestee shown in Schedule A is no longer the owner of the estate or interest covered by this policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11.

7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching subsequent to Date of Policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11(b) or 25.

8. The failure of the residential structure, or any portion of it, to have been constructed before, on or after Date of Policy in accordance with applicable building codes. This Exclusion does not modify or limit the coverage provided in Covered Risk 5 or 6.

9. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is

   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in Covered Risk 27(b) of this policy.

10 Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.

11. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

File No.: 869462

AVAILABLE DISCOUNTS DISCLOSURE STATEMENT

This is to give you notice that Stewart Title of California, Inc. ("Stewart Title") is pleased to inform you that upon proper qualification, there are premium discounts available upon the purchase of title insurance covering improved property with a one to four family residential dwelling.

Such discounts apply to and include:

Property located within an area proclaimed a state or federal disaster area;

Property purchased from a foreclosing beneficiary or successful bidder at a foreclosure sale;

Property being refinanced.

Please talk with your escrow or title officer to determine your qualification for any of these discounts.

Stewart Title Guaranty Company Privacy Notice
Stewart Title Companies

WHAT DO THE STEWART TITLE COMPANIES DO WITH YOUR PERSONAL INFORMATION?

Federal and applicable state law and regulations give consumers the right to limit some but not all sharing. Federal and applicable state law regulations also require us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand how we use your personal information. This privacy notice is distributed on behalf of the Stewart Title Guaranty Company and its title affiliates (the Stewart Title Companies), pursuant to Title V of the Gramm-Leach-Bliley Act (GLBA).

The types of personal information we collect and share depend on the product or service that you have sought through us. This information can include social security numbers and driver's license number.

All financial companies, such as the Stewart Title Companies, need to share customers' personal information to run their everyday business—to process transactions and maintain customer accounts. In the section below, we list the reasons that we can share customers' personal information; the reasons that we choose to share; and whether you can limit this sharing.

Reasons we can share your personal information.	Do we share	Can you limit this sharing?
For our everyday business purposes— to process your transactions and maintain your account. This may include running the business and managing customer accounts, such as processing transactions, mailing, and auditing services, and responding to court orders and legal investigations.	Yes	No
For our marketing purposes— to offer our products and services to you.	Yes	No
For joint marketing with other financial companies	No	We don't share
For our affiliates' everyday business purposes— information about your transactions and experiences. Affiliates are companies related by common ownership or control. They can be financial and non-financial companies. *Our affiliates may include companies with a Stewart name; financial companies, such as Stewart Title Company*	Yes	No
For our affiliates' everyday business purposes— information about your creditworthiness.	No	We don't share
For our affiliates to market to you — For your convenience, Stewart has developed a means for you to opt out from its affiliates marketing even though such mechanism is not legally required.	Yes	Yes, send your first and last name, the email address used in your transaction, your Stewart file number and the Stewart office location that is handling your transaction by email to optout@stewart.com or fax to 1-800-335-9591.
For non-affiliates to market to you. Non-affiliates are companies not related by common ownership or control. They can be financial and non-financial companies.	No	We don't share

We may disclose your personal information to our affiliates or to non-affiliates as permitted by law. If you request a transaction with a non-affiliate, such as a third party insurance company, we will disclose your personal information to that non-affiliate. [We do not control their subsequent use of information, and suggest you refer to their privacy notices.]

SHARING PRACTICES

How often do the Stewart Title Companies notify me about their practices?	We must notify you about our sharing practices when you request a transaction.
How do the Stewart Title Companies protect my personal information?	To protect your personal information from unauthorized access and use, we use security measures that comply with federal law. These measures include computer, file, and building safeguards.
How do the Stewart Title Companies collect my personal information?	We collect your personal information, for example, when you request insurance-related services provide such information to us We also collect your personal information from others, such as the real estate agent or lender involved in your transaction, credit reporting agencies, affiliates or other companies.
What sharing can I limit?	Although federal and state law give you the right to limit sharing (e.g., opt out) in certain instances, we do not share your personal information in those instances.

Contact us: If you have any questions about this privacy notice, please contact us at: **Stewart Title Guaranty Company, 1360 Post Oak Blvd., Ste. 100, Privacy Officer, Houston, Texas 77056**

Privacy Notice for California Residents

Pursuant to the California Consumer Privacy Act of 2018 ("CCPA"), Stewart Information Services Corporation and its subsidiary companies (collectively, "Stewart") are providing this **Privacy Notice for California Residents** ("CCPA Notice"). This CCPA Notice supplements the information contained in Stewart's existing privacy notice and applies solely to all visitors, users and others who reside in the State of California or are considered California Residents ("consumers" or "you"). Terms used but not defined shall have the meaning ascribed to them in the CCPA.

Information Stewart Collects

Stewart collects information that identifies, relates to, describes, references, is capable of being associated with, or could reasonably be linked, directly or indirectly, with a particular consumer, household, or device. Most of the information that Stewart collects in the course of its regular business is already protected pursuant to the Gramm-Leach-Bliley Act (GLBA). Additionally, much of this information comes from government records or other information already in the public domain. Personal information under the CCPA does not include:

- Publicly available information from government records.
- Deidentified or aggregated consumer information.
- Certain personal information protected by other sector-specific federal or California laws, including but not limited to the Fair Credit Reporting Act (FCRA), GLBA and California Financial Information Privacy Act (FIPA).

Specifically, Stewart has collected the following categories of personal information from consumers within the last twelve (12) months:

Category	Examples	Collected?
A. Identifiers.	A real name, alias, postal address, unique personal identifier, online identifier, Internet Protocol address, email address, account name, Social Security number, driver's license number, passport number, or other similar identifiers.	YES
B. Personal information categories listed in the California Customer Records statute (Cal. Civ. Code § 1798.80(e)).	A name, signature, Social Security number, physical characteristics or description, address, telephone number, passport number, driver's license or state identification card number, insurance policy number, education, employment, employment history, bank account number, credit card number, debit card number, or any other financial information, medical information, or health insurance information. Some personal information included in this category may overlap with other categories.	YES
C. Protected classification characteristics under California or federal law.	Age (40 years or older), race, color, ancestry, national origin, citizenship, religion or creed, marital status, medical condition, physical or mental disability, sex (including gender, gender identity, gender expression, pregnancy or childbirth and related medical conditions), sexual orientation, veteran or military status, genetic information (including familial genetic information).	YES
D. Commercial information.	Records of personal property, products or services purchased, obtained, or considered, or other purchasing or consuming histories or tendencies.	YES
E. Biometric information.	Genetic, physiological, behavioral, and biological characteristics, or activity patterns used to extract a template or other identifier or identifying information, such as, fingerprints, faceprints, and voiceprints, iris or retina scans, keystroke, gait, or other physical patterns, and sleep, health, or exercise data.	YES
F. Internet or other similar network activity.	Browsing history, search history, information on a consumer's interaction with a website, application, or advertisement.	YES
G. Geolocation data.	Physical location or movements.	YES
H. Sensory data.	Audio, electronic, visual, thermal, olfactory, or similar information.	YES
I. Professional or employment-related information.	Current or past job history or performance evaluations.	YES
J. Non-public education information (per the Family Educational Rights and Privacy Act (20 U.S.C. Section 1232g, 34 C.F.R. Part 99)).	Education records directly related to a student maintained by an educational institution or party acting on its behalf, such as grades, transcripts, class lists, student schedules, student identification codes, student financial information, or student disciplinary records.	YES
K. Inferences drawn from other personal information.	Profile reflecting a person's preferences, characteristics, psychological trends, predispositions, behavior, attitudes, intelligence, abilities, and aptitudes.	YES

Stewart obtains the categories of personal information listed above from the following categories of sources:

- Directly and indirectly from customers, their designees or their agents (For example, realtors, lenders, attorneys, etc.)
- Directly and indirectly from activity on Stewart's website or other applications.
- From third-parties that interact with Stewart in connection with the services we provide.

Use of Personal Information

Stewart may use or disclose the personal information we collect for one or more of the following purposes:

- To fulfill or meet the reason for which the information is provided.
- To provide, support, personalize, and develop our website, products, and services.
- To create, maintain, customize, and secure your account with Stewart.
- To process your requests, purchases, transactions, and payments and prevent transactional fraud.
- To prevent and/or process claims.
- To assist third party vendors/service providers who complete transactions or perform services on Stewart's behalf.
- As necessary or appropriate to protect the rights, property or safety of Stewart, our customers or others.
- To provide you with support and to respond to your inquiries, including to investigate and address your concerns and monitor and improve our responses.
- To personalize your website experience and to deliver content and product and service offerings relevant to your interests, including targeted offers and ads through our website, third-party sites, and via email or text message (with your consent, where required by law).
- To help maintain the safety, security, and integrity of our website, products and services, databases and other technology assets, and business.
- To respond to law enforcement or regulator requests as required by applicable law, court order, or governmental regulations.
- Auditing for compliance with federal and state laws, rules and regulations.
- Performing services including maintaining or servicing accounts, providing customer service, processing or fulfilling orders and transactions, verifying customer information, processing payments, providing advertising or marketing services or other similar services.
- To evaluate or conduct a merger, divestiture, restructuring, reorganization, dissolution, or other sale or transfer of some or all of our assets, whether as a going concern or as part of bankruptcy, liquidation, or similar proceeding, in which personal information held by us is among the assets transferred.

Stewart will not collect additional categories of personal information or use the personal information we collected for materially different, unrelated, or incompatible purposes without providing you notice.

Disclosure of Personal Information to Affiliated Companies and Nonaffiliated Third Parties

Stewart does not sell your personal information to nonaffiliated third parties. Stewart may share your information with those you have designated as your agent in the course of your transaction (for example, a realtor or a lender). Stewart may disclose your personal information to a third party for a business purpose. Typically, when we disclose personal information for a business purpose, we enter a contract that describes the purpose and requires the recipient to both keep that personal information confidential and not use it for any purpose except performing the contract.

We share your personal information with the following categories of third parties:

- Service providers and vendors (For example, search companies, mobile notaries, and companies providing credit/debit card processing, billing, shipping, repair, customer service, auditing, marketing, etc.)
- Affiliated Companies
- Litigation parties and attorneys, as required by law.
- Financial rating organizations, rating bureaus and trade associations.
- Federal and State Regulators, law enforcement and other government entities

In the preceding twelve (12) months, Stewart has disclosed the following categories of personal information for a business purpose:

Category A: Identifiers
Category B: California Customer Records personal information categories
Category C: Protected classification characteristics under California or federal law
Category D: Commercial Information
Category E: Biometric Information
Category F: Internet or other similar network activity
Category G: Geolocation data
Category H: Sensory data
Category I: Professional or employment-related information
Category J: Non-public education information
Category K: Inferences

Consumer Rights and Choices

The CCPA provides consumers (California residents) with specific rights regarding their personal information. This section describes your CCPA rights and explains how to exercise those rights.

Access to Specific Information and Data Portability Rights

You have the right to request that Stewart disclose certain information to you about our collection and use of your personal information over the past 12 months. Once we receive and confirm your verifiable consumer request, Stewart will disclose to you:

- The categories of personal information Stewart collected about you.
- The categories of sources for the personal information Stewart collected about you.
- Stewart's business or commercial purpose for collecting that personal information.
- The categories of third parties with whom Stewart shares that personal information.
- The specific pieces of personal information Stewart collected about you (also called a data portability request).
- If Stewart disclosed your personal data for a business purpose, a listing identifying the personal information categories that each category of recipient obtained.

Deletion Request Rights

You have the right to request that Stewart delete any of your personal information we collected from you and retained, subject to certain exceptions. Once we receive and confirm your verifiable consumer request, Stewart will delete (and direct our service providers to delete) your personal information from our records, unless an exception applies.

Stewart may deny your deletion request if retaining the information is necessary for us or our service providers to:

1. Complete the transaction for which we collected the personal information, provide a good or service that you requested, take actions reasonably anticipated within the context of our ongoing business relationship with you, or otherwise perform our contract with you.
2. Detect security incidents, protect against malicious, deceptive, fraudulent, or illegal activity, or prosecute those responsible for such activities.
3. Debug products to identify and repair errors that impair existing intended functionality.
4. Exercise free speech, ensure the right of another consumer to exercise their free speech rights, or exercise another right provided for by law.
5. Comply with the California Electronic Communications Privacy Act (Cal. Penal Code § 1546 *seq.*).
6. Engage in public or peer-reviewed scientific, historical, or statistical research in the public interest that adheres to all other applicable ethics and privacy laws, when the information's deletion may likely render impossible or seriously impair the research's achievement, if you previously provided informed consent.
7. Enable solely internal uses that are reasonably aligned with consumer expectations based on your relationship with us.
8. Comply with a legal obligation.
9. Make other internal and lawful uses of that information that are compatible with the context in which you provided it.

Exercising Access, Data Portability, and Deletion Rights

To exercise the access, data portability, and deletion rights described above, please submit a verifiable consumer request to us either:

- Calling us Toll Free at 1-866-571-9270
- Emailing us at Privacyrequest@stewart.com
- Visiting http://stewart.com/ccpa

Only you, or someone legally authorized to act on your behalf, may make a verifiable consumer request related to your personal information. You may also make a verifiable consumer request on behalf of your minor child.

To designate an authorized agent, please contact Stewart through one of the methods mentioned above.

You may only make a verifiable consumer request for access or data portability twice within a 12-month period. The verifiable consumer request must:

- Provide sufficient information that allows us to reasonably verify you are the person about whom we collected personal information or an authorized representative.
- Describe your request with sufficient detail that allows us to properly understand, evaluate, and respond to it.

Stewart cannot respond to your request or provide you with personal information if we cannot verify your identity or authority to make the request and confirm the personal information relates to you.

Making a verifiable consumer request does not require you to create an account with Stewart.

Response Timing and Format

We endeavor to respond to a verifiable consumer request within forty-five (45) days of its receipt. If we require more time (up to an additional 45 days), we will inform you of the reason and extension period in writing.

A written response will be delivered by mail or electronically, at your option.

Any disclosures we provide will only cover the 12-month period preceding the verifiable consumer request's receipt. The response we provide will also explain the reasons we cannot comply with a request, if applicable. For data portability requests, we will select a format to provide your personal information that is readily useable and should allow you to transmit the information from one entity to another entity without hindrance.

Stewart does not charge a fee to process or respond to your verifiable consumer request unless it is excessive, repetitive, or manifestly unfounded. If we determine that the request warrants a fee, we will tell you why we made that decision and provide you with a cost estimate before completing your request.

Non-Discrimination

Stewart will not discriminate against you for exercising any of your CCPA rights. Unless permitted by the CCPA, we will not:

- Deny you goods or services.
- Charge you a different prices or rates for goods or services, including through granting discounts or other benefits, or imposing penalties.
- Provide you a different level or quality of goods or services.
- Suggest that you may receive a different price or rate for goods or services or a different level or quality of goods or services.

Changes to Our Privacy Notice

Stewart reserves the right to amend this privacy notice at our discretion and at any time. When we make changes to this privacy notice, we will post the updated notice on Stewart's website and update the notice's effective date. **Your continued use of Stewart's website following the posting of changes constitutes your acceptance of such changes.**

Contact Information

If you have questions or comments about this notice, the ways in which Stewart collects and uses your information described here, your choices and rights regarding such use, or wish to exercise your rights under California law, please do not hesitate to contact us at:

Phone: Toll Free at 1-866-571-9270

Website: **http://stewart.com/ccpa**

Email: Privacyrequest@stewart.com

Postal Address: Stewart Information Services Corporation

Attn: Mary Thomas, Deputy Chief Compliance Officer

1360 Post Oak Blvd., Ste. 100, MC #14-1

Houston, TX 77056

stewart title

Real partners. Real possibilities.™

Kathy Crawford
Title Officer

Stewart Title of California, Inc.
11870 Pierce St, Ste 100
Riverside, CA 92505
Phone: (951) 276-2700
Fax: (951) 346-3395
kcrawfor@stewart.com

PRELIMINARY REPORT

Order No.: 869471
Your File No.:
Buyer/Borrower Name:
Seller Name: ARB Inc

Property Address: APN 050-070-019, 2910 E Nelsons Pit, Holtville, CA 92250

In response to the above referenced application for a Policy of Title Insurance, Stewart Title of California, Inc. hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a Stewart Title Guaranty Company Policy or Policies of Title Insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referenced to as an Exception on Schedule B or not excluded from coverage pursuant to the printed Schedules, Conditions, and Stipulations of said Policy forms.

The printed Exceptions and Exclusions from the coverage and Limitations on covered Risks of said policy or policies are set forth in Exhibit A attached. The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than that set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. Limitations on Covered Risks applicable to the CLTA and ALTA Homeowner's Policies of Title Insurance which establish a Deductible Amount and a Maximum Dollar Limits of Liability for certain coverages are also set forth in Exhibit A. Copies of the policy forms should be read. They are available from the office which issued this report.

Please read the exceptions shown or referred to below and the exceptions and exclusions set forth in Exhibit A of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters, which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects, and encumbrances affecting title to the land.

This report, (and any supplements or amendments thereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance a binder or commitment should be requested.

Dated as of June 30, 2020 at 8:00AM	

When replying, please contact: Kathy Crawford, Title Officer

Stewart Title of California, Inc.
11870 Pierce St, Ste 100
Riverside, CA 92505
(951) 276-2700
kcrawfor@stewart.com

PRELIMINARY REPORT

The form of Policy of Title Insurance contemplated by this report is:

☐ CLTA Standard Coverage Policy

☐ CLTA/ALTA Homeowners Policy

☐ 2006 ALTA Owner's Policy

☐ 2006 ALTA Loan Policy

☐ ALTA Short Form Residential Loan Policy

☒ Preliminary Report

SCHEDULE A

The estate or interest in the land hereinafter described or referred to covered by this report is:

FEE

Title to said estate or interest at the date hereof is vested in:

ARB, Inc., a California corporation, subject to Item 12 herein

LEGAL DESCRIPTION

The land referred to herein is situated in the State of California, County of Imperial, City of Holtville and described as follows:

The West half of the Northwest quarter of Section thirty-six (36), Township Fifteen (15) South, Range Sixteen (16) East, S.B.M., in the County of Imperial, State of California, according to the United States Government Plat of Resurvey approved November 4, 1908 and on file in the United States Land Office at Los Angeles, California.

APN: 050-070-19-00

APN: 050-070-019

(End of Legal Description)

MAP

THE MAP CONNECTED HEREWITH IS BEING PROVIDED AS A COURTESY AND FOR INFORMATIONAL PURPOSES ONLY; THIS MAP SHOULD NOT BE RELIED UPON. FURTHERMORE, THE PARCELS SET OUT ON THIS MAP MAY NOT COMPLY WITH LOCAL SUBDIVISION OR BUILDING ORDINANCES. STEWART ASSUMES NO LIABILITY, RESPONSIBILITY OR INDEMNIFICATION RELATED TO THE MAPS NOR ANY MATTERS CONCERNING THE CONTENTS OF OR ACCURACY OF THE MAP.

SCHEDULE B

At the date hereof, exceptions to coverage in addition to the printed exceptions and exclusions contained in said policy or policies would be as follows:

Taxes:

A. General and Special City and/or County taxes, including any personal property taxes and any assessments collected with taxes, for the fiscal year 2019 - 2020:
1st Installment : $962.53 Late
2nd Installment : $972.53 Late
Parcel No. : 050-070-019-000
Code Area : 068005

B. Said property has been declared tax defaulted for non-payment of delinquent taxes for the fiscal year 2020:

Amounts to redeem for the above stated fiscal year (and subsequent years, if any) are:
Amount: $ 2,002.56

C. Semi-annual water availability assessment in favor of the Imperial Irrigation District.

D. Confirmation of the tax figures must be made prior to close of escrow. Please contact the County Tax Collector prior to closing.

Exceptions:

1. Water rights, claims or title to water in or under the property, whether or not shown by the public records.

2. The lien of supplemental taxes, if any, assessed pursuant to the provisions of Chapter 3.5 (commencing with Section 75) of the Revenue and Taxation Code of the State of California.

3. Assessments for community facility districts which may exist by virtue of assessment maps or notices filed by those districts. Assessments are collected with the County Taxes.

4. Property is located within the boundary of the Imperial Irrigation District.

5. Rights or claims of easements for canals, drains, laterals, irrigation pipelines and gates not recorded in the public records.

6. Any interests (including rights of the public) in and to any portion of the property lying within roads, streets, alleys or highways.

7. Minerals of whatsoever kind, subsurface and surface substances, including but not limited to coal, lignite, oil, gas, geothermal resources, brine, uranium, clay, rock, sand and gravel in, on, under and that may be produced from the Land, together with all rights, privileges, and immunities relating thereto, whether or not appearing in the Public Records or listed in Schedule B. Stewart Title Guaranty Company makes no representation as to the present ownership of any such interests. There may be leases, grants, exceptions or reservations of interests that are not listed.

8. A grant of Deed to Rock, Sand, Gravel and Minerals, together with the appurtenant rights to use the surface of the land all of the rock, sand, gravel and similar substances, also all gold, silver,

precious metals, oil or any other minerals and hydrocarbon substances, by document recorded November 13, 1933 in Book 367 page 549 of Official Records.

9. Matters contained in document entitled "Agreement for Service Pipe" recorded August 18, 1955 in Book 917 page 236 of Official Records.

10. Easement and rights incidental thereto for a right of way for underground tile line, to Vernon Nussbaum and Dinette Nussbaum, as set forth in a document recorded October 5, 1964 in Book 1192 page 945 of Official Records.

11. Easement and rights incidental thereto for constructing, operating and maintaining a power line or lines, underground and/or overhead and necessary appurtenances attached thereto or as from time to time may be reconstructed, enlarged or otherwise changed, over and across, and incidental purposes, recorded November 25, 1987 in Book 1592 page 1543 of Official Records, to Imperial Irrigation District, its successors or assigns,

12. Any defect in, or invalidity of title to the estate or interest set forth in Schedule A arising out of, or occasioned by, that certain conveyance from Stellaris LLC, a Nevada limited liability company, as grantor to ARB, Inc., a California corporation, as grantee, recorded January 7, 2015 as Instrument No. 15-000235 of Official records. To remove this exception from Schedule B, Stewart Title Guaranty Company will require: (1) proof of the validity of this document prior to the issuance of any policy of title insurance; (2) a new deed, notarized in the current escrow office or any Stewart Title office; and (3) a statement of information from Stellaris LLC, a Nevada limited liability company. The deed and statement of information are subject to review and management approval.

13. Please be advised that our search did not disclose any open deeds of trust of record. If you should have knowledge of any outstanding obligation, please contact your title officer immediately for further review.

14. In order to insure a conveyance, acquisition or encumbrance by the corporation or unincorporated association named below you must provide the following:
Entity: ARB, Inc.
(a) A copy of the corporation By-Laws or Articles.
(b) An original or certified copy of the Resolution authorizing the subject transaction.
(c) If the By-Laws or Articles require approval by a "parent" organization, a copy of that entities' By-Laws or Articles.
(d) If an unincorporated association, a statement pursuant to applicable law (such as California Corporation Code Section 20002).
Additional requirements or items may be requested upon review of the required documents set forth above,

15. Rights or claims of parties in possession and easements or claims of easements not shown by the public records, conflicts in boundary lines, overlaps, shortage in area, encroachments, and any matters not of record which would be disclosed by an accurate survey or inspection of the property.

16. Rights of tenants in possession whether or not recorded in the public record.

(End of Exceptions)

NOTES AND REQUIREMENTS

A. There are no conveyances affecting said land, recorded with the County Recorder within 24 months of the date of this report.

B. If an Owners Policy will be requested, please be aware that unless instructed otherwise, we will issue a CLTA Standard Coverage Owners Policy. If a different form of policy is contemplated for this transaction, please advise and contact your title officer for additional requirements.

C. All Transactions - Seller(s) and Buyer(s) or Borrowers are provided as attachments Stewart Title's document entitled "Acknowledgement of Receipt, Understanding and Approval of STG Privacy Notice for Stewart Title Companies and Stewart's Affiliated Business Arrangement Disclosure Statement" along with those individually named documents for your review and acknowledgment prior to closing.

D. All Transactions - Buyer(s)/Seller(s)/Borrower(s) are provided Stewart Title's Preliminary report for review and acknowledgment prior to closing. Buyer(s) approval to include the Preliminary Report items that remain as exceptions to the title policy.

E. Purchase Transaction Only-Seller(s)/Owner(s) are provided Stewart Title's Owner Affidavit and Indemnity for completion prior to closing.

CALIFORNIA "GOOD FUNDS" LAW

California Insurance Code Section 12413.1 regulates the disbursement of escrow and sub-escrow funds by title companies. The law requires that funds be deposited in the title company escrow account and available for withdrawal prior to disbursement. Funds received by Stewart Title of California, Inc. via wire transfer may be disbursed upon receipt. Funds received via cashier's checks or teller checks drawn on a California Bank may be disbursed on the next business day after the day of deposit. If funds are received by any other means, recording and/or disbursement may be delayed, and you should contact your title or escrow officer. All escrow and sub-escrow funds received will be deposited with other escrow funds in one or more non-interest bearing escrow accounts in a financial institution selected by Stewart Title of California, Inc.. Stewart Title of California, Inc. may receive certain direct or indirect benefits from the financial institution by reason of the deposit of such funds or the maintenance of such accounts with the financial institution, and Stewart Title of California, Inc. shall have no obligation to account to the depositing party in any manner for the value of, or to pay to such party, any benefit received by Stewart Title of California, Inc.. Such benefits shall be deemed additional compensation to Stewart Title of California, Inc. for its services in connection with the escrow or sub-escrow.

If any check submitted is dishonored upon presentation for payment, you are authorized to notify all principals and/or their respective agents of such nonpayment.

EXHIBIT "A"

LEGAL DESCRIPTION

Order No.: 869471
Escrow No.: 869471

The land referred to herein is situated in the State of California, County of Imperial, City of Holtville and described as follows:

The West half of the Northwest quarter of Section thirty-six (36), Township Fifteen (15) South, Range Sixteen (16) East, S.B.M., in the County of Imperial, State of California, according to the United States Government Plat of Resurvey approved November 4, 1908 and on file in the United States Land Office at Los Angeles, California.

APN: 050-070-19-00

APN: 050-070-019

(End of Legal Description)

AFFILIATED BUSINESS ARRANGEMENT DISCLOSURE STATEMENT

Date: August 3, 2020

File No.: 869471

Property: APN 050-070-019, 2910 E Nelsons Pit, Holtville, CA 92250

From: Stewart Title of California, Inc.

This is to give you notice that Stewart Title of California, Inc. ("Stewart Title") has a business relationship with Stewart Solutions, LLC, DBA – Stewart Specialty Insurance Services, LLC ("Stewart Insurance"). Stewart Information Services Corporation owns 100% of Stewart Insurance and . Because of this relationship, this referral may provide Stewart Title a financial or other benefit.

Set forth below is the estimated charge or range of charges for the settlement services listed. You are NOT required to use the listed provider(s) as a condition for purchase, sale, or refinance of the subject Property. THERE ARE FREQUENTLY OTHER SETTLEMENT SERVICE PROVIDERS AVAILABLE WITH SIMILAR SERVICES. YOU ARE FREE TO SHOP AROUND TO DETERMINE THAT YOU ARE RECEIVING THE BEST SERVICES AND THE BEST RATE FOR THESE SERVICES.

Stewart Insurance Settlement Service	***Charge or range of charges***
Hazard Insurance	$400.00 to $6,500.00
Home Warranty	$255.00 to $ 780.00
Natural Hazard Disclosure Report	$ 42.50 to $ 149.50

ACKNOWLEDGEMENT OF RECEIPT, UNDERSTANDING AND APPROVAL OF STEWART TITLE GUARANTY COMPANY PRIVACY NOTICE FOR STEWART TITLE COMPANIES AND AFFILIATED BUSINESS ARRANGEMENT DISCLOSURE STATEMENT

The undersigned hereby acknowledge receipt of the Stewart Title Guaranty Company Privacy Notice for Stewart Title Companies and the Affiliated Business Arrangement Disclosure Statement that apply to this transaction. The undersigned further acknowledge that he/she/they have received, read, understand and accept these documents in connection with the above described transaction.

The undersigned have received a copy of this acknowledgement as evidenced by the signature below.

_____
ARB Inc

TBD

By:_____

CALIFORNIA LAND TITLE ASSOCIATION

STANDARD COVERAGE POLICY – 1990
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building or zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien, or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.

2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.

3. Defects, liens, encumbrances, adverse claims or other matters:
   a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
   b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   c) resulting in no loss or damage to the insured claimant;
   d) attaching or created subsequent to Date of Policy; or
   e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.

4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable doing business laws of the state in which the land is situated.

5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.

6. Any claim, which arises out of the transaction vesting in the insured the estate of interest insured by this policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART I

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.

   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, not shown by the public records.

4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records

5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

6. Any lien or right to a lien for services, labor or material unless such lien is shown by the Public Records at Date of Policy.

CLTA/ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE (12-02-13)
EXCLUSIONS

In addition to the Exceptions in Schedule B, You are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of those portions of any law or government regulation concerning:
   a. building;
   b. zoning;
   c. land use;
   d. improvements on the Land;
   e. land division;
   f. environmental protection.

   This Exclusion does not limit the coverage described in Covered Risk 8.a., 14, 15, 16, 18, 19, 20, 23 or 27.

2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not limit the coverage described in Covered Risk 14 or 15.
3. The right to take the Land by condemning it. This Exclusion does not limit the coverage described in Covered Risk 17.

4. Risks:
   a. that are created, allowed, or agreed to by You, whether or not they appear in the Public Records;
   b. that are Known to You at the Policy Date, but not to Us, unless they are recorded in the Public Records at the Policy Date;
   c. that result in no loss to You; or
   d. that first occur after the Policy Date - this does not limit the coverage described in Covered Risk 7, 8.e., 25, 26, 27 or 28.

5. Failure to pay value for Your Title.

6. Lack of a right:
   a. to any land outside the area specifically described and referred to in paragraph 3 of Schedule A; and
   b. in streets, alleys, or waterways that touch the Land.

   This Exclusion does not limit the coverage described in Covered Risk 11 or 21.

7. The transfer of the Title to You is invalid as a preferential transfer or as a fraudulent transfer or conveyance under federal bankruptcy, state insolvency, or similar creditors' rights laws.

8. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.

9. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

LIMITATIONS ON COVERED RISKS

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows:
* For Covered Risk 16, 18, 19, and 21 Your Deductible Amount and Our Maximum Dollar Limit of Liability shown in Schedule A. The deductible amounts and maximum dollar limits shown on Schedule A are as follows:

	Your Deductible Amount	Our Maximum Dollar Limit of Liability
Covered Risk 16:	1% of Policy Amount or $2,500.00 (whichever is less)	$10,000.00
Covered Risk 18:	1% of Policy Amount or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 19:	1% of Policy Amount or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 21:	1% of Policy Amount or $2,500.00 (whichever is less)	$5,000.00

2006 ALTA LOAN POLICY (06-17-06)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.

4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.

5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.

6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.

7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

Except as provided in Schedule B - Part II, this policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses, that arise by reason of:

PART I

1. (a) taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
   (b) proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the Public Records.

4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.

5. (a) unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

6. Any lien or right to a lien for services, labor or material unless such lien is shown by the Public Records at Date of Policy.

PART II

In addition to the matters set forth in Part I of this Schedule, the Title is subject to the following matters, and the Company insures against loss or damage sustained in the event that they are not subordinate to the lien of the Insured Mortgage:

2006 ALTA OWNER'S POLICY (06-17-06)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.

4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.

5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The above policy form may be issued to afford either Standard Coverage or Extended Coverage. In addition to the above Exclusions from Coverage, the Exceptions from Coverage in a Standard Coverage policy will also include the following Exceptions from Coverage:

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage (and the company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.

2. Any facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.

3. Easements, liens or encumbrances, or claims thereof, which are not shown by the public records.

4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and that are not shown by the Public Records.

5. (a) unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

6. Any lien or right to a lien for services, labor or material unless such lien is shown by the Public Records at Date of Policy..

ALTA EXPANDED COVERAGE RESIDENTIAL LOAN POLICY – ASSESSMENTS PRIORITY (04-02-15)
EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys fees or expenses which arise by reason of:

1. a. Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions or location of any improvement now or hereafter erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection

   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.
   b. Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 5, 6, 13(c), 13(d), 14 or 16.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims or other matters:

   (a) created, suffered, assumed or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting In no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 16, 17, 18, 19, 20, 21, 22, 23, 24, 27 or 28); or
   (e) resulting in loss or damage which would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.

4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing- business laws of the state where the Land is situated.

5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury, or any consumer credit protection or truth-in-lending law. This Exclusion does not modify or limit the coverage provided in Covered Risk 26.

6. Any claim of invalidity, unenforceability or lack of priority of the lien of the Insured Mortgage as to Advances or modifications made after the Insured has Knowledge that the vestee shown in Schedule A is no longer the owner of the estate or interest covered by this policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11.

7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching subsequent to Date of Policy. This Exclusion does not modify or limit the coverage provided in Covered Risk 11(b) or 25.

8. The failure of the residential structure, or any portion of it, to have been constructed before, on or after Date of Policy in accordance with applicable building codes. This Exclusion does not modify or limit the coverage provided in Covered Risk 5 or 6.

9. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is

   (a) a fraudulent conveyance or fraudulent transfer, or
   (b) a preferential transfer for any reason not stated in Covered Risk 27(b) of this policy.

10 Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.

11. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

File No.: 869471

AVAILABLE DISCOUNTS DISCLOSURE STATEMENT

This is to give you notice that Stewart Title of California, Inc. ("Stewart Title") is pleased to inform you that upon proper qualification, there are premium discounts available upon the purchase of title insurance covering improved property with a one to four family residential dwelling.

Such discounts apply to and include:

Property located within an area proclaimed a state or federal disaster area;

Property purchased from a foreclosing beneficiary or successful bidder at a foreclosure sale;

Property being refinanced.

Please talk with your escrow or title officer to determine your qualification for any of these discounts.

Stewart Title Guaranty Company Privacy Notice
Stewart Title Companies

WHAT DO THE STEWART TITLE COMPANIES DO WITH YOUR PERSONAL INFORMATION?

Federal and applicable state law and regulations give consumers the right to limit some but not all sharing. Federal and applicable state law regulations also require us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand how we use your personal information. This privacy notice is distributed on behalf of the Stewart Title Guaranty Company and its title affiliates (the Stewart Title Companies), pursuant to Title V of the Gramm-Leach-Bliley Act (GLBA).

The types of personal information we collect and share depend on the product or service that you have sought through us. This information can include social security numbers and driver's license number.

All financial companies, such as the Stewart Title Companies, need to share customers' personal information to run their everyday business—to process transactions and maintain customer accounts. In the section below, we list the reasons that we can share customers' personal information; the reasons that we choose to share; and whether you can limit this sharing.

Reasons we can share your personal information.	Do we share	Can you limit this sharing?
For our everyday business purposes— to process your transactions and maintain your account. This may include running the business and managing customer accounts, such as processing transactions, mailing, and auditing services, and responding to court orders and legal investigations.	Yes	No
For our marketing purposes— to offer our products and services to you.	Yes	No
For joint marketing with other financial companies	No	We don't share
For our affiliates' everyday business purposes— information about your transactions and experiences. Affiliates are companies related by common ownership or control. They can be financial and non-financial companies. *Our affiliates may include companies with a Stewart name; financial companies, such as Stewart Title Company*	Yes	No
For our affiliates' everyday business purposes— information about your creditworthiness.	No	We don't share
For our affiliates to market to you — For your convenience, Stewart has developed a means for you to opt out from its affiliates marketing even though such mechanism is not legally required.	Yes	Yes, send your first and last name, the email address used in your transaction, your Stewart file number and the Stewart office location that is handling your transaction by email to optout@stewart.com or fax to 1-800-335-9591.
For non-affiliates to market to you. Non-affiliates are companies not related by common ownership or control. They can be financial and non-financial companies.	No	We don't share

We may disclose your personal information to our affiliates or to non-affiliates as permitted by law. If you request a transaction with a non-affiliate, such as a third party insurance company, we will disclose your personal information to that non-affiliate. [We do not control their subsequent use of information, and suggest you refer to their privacy notices.]

SHARING PRACTICES

How often do the Stewart Title Companies notify me about their practices?	We must notify you about our sharing practices when you request a transaction.
How do the Stewart Title Companies protect my personal information?	To protect your personal information from unauthorized access and use, we use security measures that comply with federal law. These measures include computer, file, and building safeguards.
How do the Stewart Title Companies collect my personal information?	We collect your personal information, for example, when you request insurance-related services provide such information to us We also collect your personal information from others, such as the real estate agent or lender involved in your transaction, credit reporting agencies, affiliates or other companies.
What sharing can I limit?	Although federal and state law give you the right to limit sharing (e.g., opt out) in certain instances, we do not share your personal information in those instances.

Contact us: If you have any questions about this privacy notice, please contact us at: **Stewart Title Guaranty Company, 1360 Post Oak Blvd., Ste. 100, Privacy Officer, Houston, Texas 77056**

Privacy Notice for California Residents

Pursuant to the California Consumer Privacy Act of 2018 ("CCPA"), Stewart Information Services Corporation and its subsidiary companies (collectively, "Stewart") are providing this **Privacy Notice for California Residents** ("CCPA Notice"). This CCPA Notice supplements the information contained in Stewart's existing privacy notice and applies solely to all visitors, users and others who reside in the State of California or are considered California Residents ("consumers" or "you"). Terms used but not defined shall have the meaning ascribed to them in the CCPA.

Information Stewart Collects

Stewart collects information that identifies, relates to, describes, references, is capable of being associated with, or could reasonably be linked, directly or indirectly, with a particular consumer, household, or device. Most of the information that Stewart collects in the course of its regular business is already protected pursuant to the Gramm-Leach-Bliley Act (GLBA). Additionally, much of this information comes from government records or other information already in the public domain. Personal information under the CCPA does not include:

- Publicly available information from government records.
- Deidentified or aggregated consumer information.
- Certain personal information protected by other sector-specific federal or California laws, including but not limited to the Fair Credit Reporting Act (FCRA), GLBA and California Financial Information Privacy Act (FIPA).

Specifically, Stewart has collected the following categories of personal information from consumers within the last twelve (12) months:

Category	Examples	Collected?
A. Identifiers.	A real name, alias, postal address, unique personal identifier, online identifier, Internet Protocol address, email address, account name, Social Security number, driver's license number, passport number, or other similar identifiers.	YES
B. Personal information categories listed in the California Customer Records statute (Cal. Civ. Code § 1798.80(e)).	A name, signature, Social Security number, physical characteristics or description, address, telephone number, passport number, driver's license or state identification card number, insurance policy number, education, employment, employment history, bank account number, credit card number, debit card number, or any other financial information, medical information, or health insurance information. Some personal information included in this category may overlap with other categories.	YES
C. Protected classification characteristics under California or federal law.	Age (40 years or older), race, color, ancestry, national origin, citizenship, religion or creed, marital status, medical condition, physical or mental disability, sex (including gender, gender identity, gender expression, pregnancy or childbirth and related medical conditions), sexual orientation, veteran or military status, genetic information (including familial genetic information).	YES
D. Commercial information.	Records of personal property, products or services purchased, obtained, or considered, or other purchasing or consuming histories or tendencies.	YES
E. Biometric information.	Genetic, physiological, behavioral, and biological characteristics, or activity patterns used to extract a template or other identifier or identifying information, such as, fingerprints, faceprints, and voiceprints, iris or retina scans, keystroke, gait, or other physical patterns, and sleep, health, or exercise data.	YES
F. Internet or other similar network activity.	Browsing history, search history, information on a consumer's interaction with a website, application, or advertisement.	YES
G. Geolocation data.	Physical location or movements.	YES
H. Sensory data.	Audio, electronic, visual, thermal, olfactory, or similar information.	YES
I. Professional or employment-related information.	Current or past job history or performance evaluations.	YES
J. Non-public education information (per the Family Educational Rights and Privacy Act (20 U.S.C. Section 1232g, 34 C.F.R. Part 99)).	Education records directly related to a student maintained by an educational institution or party acting on its behalf, such as grades, transcripts, class lists, student schedules, student identification codes, student financial information, or student disciplinary records.	YES
K. Inferences drawn from other personal information.	Profile reflecting a person's preferences, characteristics, psychological trends, predispositions, behavior, attitudes, intelligence, abilities, and aptitudes.	YES

Stewart obtains the categories of personal information listed above from the following categories of sources:

- Directly and indirectly from customers, their designees or their agents (For example, realtors, lenders, attorneys, etc.)
- Directly and indirectly from activity on Stewart's website or other applications.
- From third-parties that interact with Stewart in connection with the services we provide.

Use of Personal Information

Stewart may use or disclose the personal information we collect for one or more of the following purposes:

- To fulfill or meet the reason for which the information is provided.
- To provide, support, personalize, and develop our website, products, and services.
- To create, maintain, customize, and secure your account with Stewart.
- To process your requests, purchases, transactions, and payments and prevent transactional fraud.
- To prevent and/or process claims.
- To assist third party vendors/service providers who complete transactions or perform services on Stewart's behalf.
- As necessary or appropriate to protect the rights, property or safety of Stewart, our customers or others.
- To provide you with support and to respond to your inquiries, including to investigate and address your concerns and monitor and improve our responses.
- To personalize your website experience and to deliver content and product and service offerings relevant to your interests, including targeted offers and ads through our website, third-party sites, and via email or text message (with your consent, where required by law).
- To help maintain the safety, security, and integrity of our website, products and services, databases and other technology assets, and business.
- To respond to law enforcement or regulator requests as required by applicable law, court order, or governmental regulations.
- Auditing for compliance with federal and state laws, rules and regulations.
- Performing services including maintaining or servicing accounts, providing customer service, processing or fulfilling orders and transactions, verifying customer information, processing payments, providing advertising or marketing services or other similar services.
- To evaluate or conduct a merger, divestiture, restructuring, reorganization, dissolution, or other sale or transfer of some or all of our assets, whether as a going concern or as part of bankruptcy, liquidation, or similar proceeding, in which personal information held by us is among the assets transferred.

Stewart will not collect additional categories of personal information or use the personal information we collected for materially different, unrelated, or incompatible purposes without providing you notice.

Disclosure of Personal Information to Affiliated Companies and Nonaffiliated Third Parties

Stewart does not sell your personal information to nonaffiliated third parties. Stewart may share your information with those you have designated as your agent in the course of your transaction (for example, a realtor or a lender). Stewart may disclose your personal information to a third party for a business purpose. Typically, when we disclose personal information for a business purpose, we enter a contract that describes the purpose and requires the recipient to both keep that personal information confidential and not use it for any purpose except performing the contract.

We share your personal information with the following categories of third parties:

- Service providers and vendors (For example, search companies, mobile notaries, and companies providing credit/debit card processing, billing, shipping, repair, customer service, auditing, marketing, etc.)
- Affiliated Companies
- Litigation parties and attorneys, as required by law.
- Financial rating organizations, rating bureaus and trade associations.
- Federal and State Regulators, law enforcement and other government entities

In the preceding twelve (12) months, Stewart has disclosed the following categories of personal information for a business purpose:

Category A: Identifiers
Category B: California Customer Records personal information categories
Category C: Protected classification characteristics under California or federal law
Category D: Commercial Information
Category E: Biometric Information
Category F: Internet or other similar network activity
Category G: Geolocation data
Category H: Sensory data
Category I: Professional or employment-related information
Category J: Non-public education information
Category K: Inferences

Consumer Rights and Choices

The CCPA provides consumers (California residents) with specific rights regarding their personal information. This section describes your CCPA rights and explains how to exercise those rights.

Access to Specific Information and Data Portability Rights

You have the right to request that Stewart disclose certain information to you about our collection and use of your personal information over the past 12 months. Once we receive and confirm your verifiable consumer request, Stewart will disclose to you:

- The categories of personal information Stewart collected about you.
- The categories of sources for the personal information Stewart collected about you.
- Stewart's business or commercial purpose for collecting that personal information.
- The categories of third parties with whom Stewart shares that personal information.
- The specific pieces of personal information Stewart collected about you (also called a data portability request).
- If Stewart disclosed your personal data for a business purpose, a listing identifying the personal information categories that each category of recipient obtained.

Deletion Request Rights

You have the right to request that Stewart delete any of your personal information we collected from you and retained, subject to certain exceptions. Once we receive and confirm your verifiable consumer request, Stewart will delete (and direct our service providers to delete) your personal information from our records, unless an exception applies.

Stewart may deny your deletion request if retaining the information is necessary for us or our service providers to:

1. Complete the transaction for which we collected the personal information, provide a good or service that you requested, take actions reasonably anticipated within the context of our ongoing business relationship with you, or otherwise perform our contract with you.
2. Detect security incidents, protect against malicious, deceptive, fraudulent, or illegal activity, or prosecute those responsible for such activities.
3. Debug products to identify and repair errors that impair existing intended functionality.
4. Exercise free speech, ensure the right of another consumer to exercise their free speech rights, or exercise another right provided for by law.
5. Comply with the California Electronic Communications Privacy Act (Cal. Penal Code § 1546 *seq.*).
6. Engage in public or peer-reviewed scientific, historical, or statistical research in the public interest that adheres to all other applicable ethics and privacy laws, when the information's deletion may likely render impossible or seriously impair the research's achievement, if you previously provided informed consent.
7. Enable solely internal uses that are reasonably aligned with consumer expectations based on your relationship with us.
8. Comply with a legal obligation.
9. Make other internal and lawful uses of that information that are compatible with the context in which you provided it.

Exercising Access, Data Portability, and Deletion Rights

To exercise the access, data portability, and deletion rights described above, please submit a verifiable consumer request to us either:

- Calling us Toll Free at 1-866-571-9270
- Emailing us at Privacyrequest@stewart.com
- Visiting http://stewart.com/ccpa

Only you, or someone legally authorized to act on your behalf, may make a verifiable consumer request related to your personal information. You may also make a verifiable consumer request on behalf of your minor child.

To designate an authorized agent, please contact Stewart through one of the methods mentioned above.

You may only make a verifiable consumer request for access or data portability twice within a 12-month period. The verifiable consumer request must:

- Provide sufficient information that allows us to reasonably verify you are the person about whom we collected personal information or an authorized representative.
- Describe your request with sufficient detail that allows us to properly understand, evaluate, and respond to it.

Stewart cannot respond to your request or provide you with personal information if we cannot verify your identity or authority to make the request and confirm the personal information relates to you.

Making a verifiable consumer request does not require you to create an account with Stewart.

Response Timing and Format

We endeavor to respond to a verifiable consumer request within forty-five (45) days of its receipt. If we require more time (up to an additional 45 days), we will inform you of the reason and extension period in writing.

A written response will be delivered by mail or electronically, at your option.

Any disclosures we provide will only cover the 12-month period preceding the verifiable consumer request's receipt. The response we provide will also explain the reasons we cannot comply with a request, if applicable. For data portability requests, we will select a format to provide your personal information that is readily useable and should allow you to transmit the information from one entity to another entity without hindrance.

Stewart does not charge a fee to process or respond to your verifiable consumer request unless it is excessive, repetitive, or manifestly unfounded. If we determine that the request warrants a fee, we will tell you why we made that decision and provide you with a cost estimate before completing your request.

Non-Discrimination

Stewart will not discriminate against you for exercising any of your CCPA rights. Unless permitted by the CCPA, we will not:

- Deny you goods or services.
- Charge you a different prices or rates for goods or services, including through granting discounts or other benefits, or imposing penalties.
- Provide you a different level or quality of goods or services.
- Suggest that you may receive a different price or rate for goods or services or a different level or quality of goods or services.

Changes to Our Privacy Notice

Stewart reserves the right to amend this privacy notice at our discretion and at any time. When we make changes to this privacy notice, we will post the updated notice on Stewart's website and update the notice's effective date. **Your continued use of Stewart's website following the posting of changes constitutes your acceptance of such changes.**

Contact Information

If you have questions or comments about this notice, the ways in which Stewart collects and uses your information described here, your choices and rights regarding such use, or wish to exercise your rights under California law, please do not hesitate to contact us at:

Phone: Toll Free at 1-866-571-9270

Website: **http://stewart.com/ccpa**

Email: Privacyrequest@stewart.com

Postal Address: Stewart Information Services Corporation

Attn: Mary Thomas, Deputy Chief Compliance Officer

1360 Post Oak Blvd., Ste. 100, MC #14-1

Houston, TX 77056

APPENDIX H

Vikings Solar
Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283

Inquiry Number: 6320675.5
January 08, 2021

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

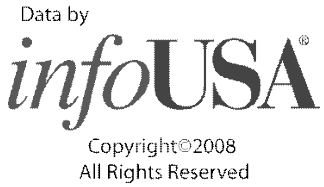
DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.



RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2017	☐	☐	Haines Criss-Cross Directory
2014	☑	☐	EDR Digital Archive
2010	☐	☐	Haines Criss-Cross Directory
2005	☐	☐	Haines Criss-Cross Directory
2000	☐	☐	Haines Criss-Cross Directory
1995	☐	☐	Haines Criss-Cross Directory
1992	☐	☐	EDR Digital Archive

FINDINGS

TARGET PROPERTY STREET

Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283

Year	*CD Image*	*Source*	
EASTNELSON PIT RD			
2014	pg A1	EDR Digital Archive	
NELSON PIT RD			
2017	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
2010	-	Haines Criss-Cross Directory	Street not listed in Source
2005	-	Haines Criss-Cross Directory	Street not listed in Source
2000	-	Haines Criss-Cross Directory	Street not listed in Source
1995	-	Haines Criss-Cross Directory	Street not listed in Source
1992	-	EDR Digital Archive	Target and Adjoining not listed in Source

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

EASTNELSON PIT RD 2014

2596 FUSI, LOURDES R

APPENDIX I

Vikings Solar
Nelson Pit Road At East Highline Canal
Winterhaven, CA 92283

Inquiry Number: 6320675.7
January 06, 2021

EDR Environmental Lien and AUL Search

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

EDR Environmental Lien and AUL Search

The EDR Environmental Lien and AUL Search Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

Nelson Pit Road At East Highline Canal
Vikings Solar
Winterhaven, CA 92283

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

AULs: Found ☐ Not Found ☒

RESEARCH SOURCE

Source 1:

Imperial Recorder
Imperial, CA

PROPERTY INFORMATION

Deed 1:

Type of Deed:	deed
Title is vested in:	RL & R Strahan
Title received from:	Cocpah Nurseries Inc
Deed Dated	4/19/2011
Deed Recorded:	5/31/2011
Book:	NA
Page:	na
Volume:	na
Instrument:	na
Docket:	NA
Land Record Comments:	
Miscellaneous Comments:	
Legal Description:	See Exhibit
Legal Current Owner:	RL & R Strahan
Parcel # / Property Identifier:	050-070-018
Comments:	See Exhibit

Deed Exhibit 1

RECORDING REQUESTED BY:
Stewart Title of California.
WHEN RECORDED MAIL TO
AND MAIL TAX STATEMENTS TO:
RL&R Strahm
2605 N Holt Road
Holtville, CA 92250

ORDER NO. 7434-377939
ESCROW NO. 7402-377939
APN. 050-070-018

Recorded in Official Records, Imperial County

Chuck Storey
County Clerk / Recorder

STC Stewart Title Company

Doc#: 2011–012936

5/31/2011
4:30 PM
AP

Titles: 1 **Pages: 3**

Fees	13.00
Taxes	2,200.00
Other	0.00
PAID	$2,213.00

SPACE ABOVE THIS LINE FOR RECORDER'S USE

3
1
SR1

GRANT DEED

THE UNDERSIGNED GRANTOR(s) DECLARE(s):
DOCUMENTARY TRANSFER TAX is: $2,200.00 CITY TAX
☐ Monument Preservation Fee is:
☒ computed on full value of property conveyed, or
☐ computed on full value less value of liens or encumbrances remaining at time of sale.
☒ Unincorporated area: ~~☒ City of Imperial County~~, and
FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,
Cocopah Nurseries Inc.,, a California Corporation

hereby **GRANT(S)** to
RL&R Strahm, a California general partnership

the following described real property in ~~the City of Imperial County~~, County of Imperial, State of California
LEGAL DESCRIPTION ON EXHIBIT A

DATE: April 19, 2011

Cocopah Nurseries Inc.,

Duane Lee Young

DUANE LEE YOUNG
Authorized Signer

STATE OF CALIFORNIA
COUNTY OF Riverside

On May 10, 2011 before me,
Phyllis R. Park a Notary
Public, personally appeared Duane Lee Young

, who proved to me on the basis of satisfactory evidence to be the person(s), whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(~~s~~) on the instrument the person(~~s~~) or the entity upon behalf of which the person(~~s~~) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Phyllis R Park

PHYLLIS R. PARK
Commission # 1870892
Notary Public - California
Riverside County
My Comm. Expires Dec 6, 2013

MAIL TAX STATEMENTS AS DIRECTED ABOVE

EXHIBIT "A"
LEGAL DESCRIPTION

Order No.: 377939
Escrow No: 377939

The land referred to herein is situated in the State of California, County of Imperial, and described as follows:

Parcel 1:

The East half, *and* the East half of the Southwest quarter, *and* the Southeast quarter of the Northwest quarter of Section 36, Township 15 South, Range 16 East, San Bernardino Base and Meridian, County of Imperial, State of California, according to the United States Government Official Plat of Survey approved and on file in the District Land Office.

Excepting therefrom, an undivided 50% interest of all mineral and geothermal rights now held by the grantor appurtenant to the property, but without any right whatsoever to enter upon the surface of said land or any portion thereof within 500 feet vertical distance below the surface thereof, as reserved by The Nussbaum Family Limited Partnership, a California limited partnership in deed recorded April 1, 2008 as Instrument 2008-009138 of Official Records.

Parcel 2:

The Northeast quarter of the Northwest quarter of Section 36, Township 15 South, Range 16 East, San Bernardino Base and Meridian, County of Imperial, State of California, according to the United States Government Official Plat of Survey approved and on file in the District Land Office;

Excepting therefrom all oil and mineral rights as reserved by J. Lillian Callander in deed recorded December 4, 1951 as Instrument No. 22 in Book 827, Page 354 of Official Records.

Excepting therefrom, an undivided 50% interest of all mineral and geothermal rights now held by the grantor appurtenant to the property, but without any right whatsoever to enter upon the surface of said land or any portion thereof within 500 feet vertical distance below the surface thereof, as reserved by The Nussbaum Family Limited Partnership, a California limited partnership in deed recorded April 1, 2008 as Instrument 2008-009138 of Official Records.

(APN: 050-070-018)

Parcel 3:

A right of way for an underground tile line across the Northwest quarter of the Northwest quarter of Section 36, Township 15 South, Range 16 East, San Bernardino Base and Meridian, County of Imperial, State of California, according to the United States Government Official Plat of Survey approved and on file in the District Land Office, the centerline of which is described as follows:

Beginning at a point which is 1,262.25 feet South of the northeast corner of the Northwest quarter of the Northwest quarter of said Section 36; thence North 76°22'00" West, 1,185 feet to a point in the east bank of the East Highline Canal, as now constructed across said property.

(End of Legal Description)

APPENDIX J

Jeffrey O. Lyon, PE
Principal Engineer

Education

B.S. Civil Engineering (Magna Cum Laude)
California Polytechnic University, Pomona Campus 1978

Registration

Registered Civil Engineer No. 31921, California
Registered Civil Engineer No. 16994, Arizona

Professional Experience

1987 - Present	Principal Engineer Southland Geotechnical, Inc.
1982 - 1987	Principal Engineer Lyon Engineers, Inc.
1978 - 1981	Partner/Senior Engineer Tesco Engineering
1974 - 1977	Survey Party Chief Tesco Engineering
1972 - 1973	Survey Party Chief Lyon & Associates

Summary of Experience

As Principal Engineer, Mr. Lyon is responsible for financial and technical management of all employees in Southland Geotechnical's four branch offices. Mr. Lyon has performed site investigations for residential subdivisions, geogrid-reinforced slopes, shopping centers, military airfields, roadways, administration and office buildings, elementary and high schools, goldmine mill processing facilities, hydro-electric plants, power transmission lines, electrical substations, co-generation power plants and geothermal power plants. He has provided design for drilled piers, driven piles, stone columns and floating (rigid) mats, and has performed seismic risk evaluations, ground shaking analyses, liquefaction studies and liquefaction induced settlements studies. Mr. Lyon has conducted Phase I and Phase II ESA's throughout the Imperial and Coachella Valleys for over 7 years. Mr. Lyon's experience also includes forensic investigations for foundation/structural distress to residential, commercial and educational facilities, and has performed pressure grout stabilization and lifting for distress remediation.

Selected Project Experience

- **Aten Road Improvements, Imperial, CA**

Performed Phase I environmental site assessment for improvements to Aten Road in accordance to CalTrans requirements.

- **Gateway to the Americas, Calexico, CA**

Conducted Phase I ESA, geologic hazards study and geotechnical investigation including liquefaction evaluation for 1,700 acre development associated with new Port of Entry east of Calexico

- **El Centro Magistrate Court, El Centro, CA**

Conducted geotechnical investigation and Phase I ESA for new Federal Magistrate Court building at site with soft soil conditions requiring foundation settlement analysis

- **El Centro Regional Medical Center, El Centro, CA**

Conducted Phase I ESA and geotechnical investigation for 50,000 sf, 2-story addition to the medical center's emergency room, operating rooms, and recovery rooms.

- **Brawley Union High School, Brawley, CA**

Conducted Phase II investigation for PCB and lead contamination of surficial soil and hydrocarbon contamination of subsurface soil of a property proposed for purchase.

- **EW Corporation Site, Westmorland, CA**

Conducted Phase II investigation for hydrocarbon contamination of subsurface soil of a service station site with leaking underground storage tanks prior to property purchase

- **Various Apartment Complexes, Imperial County, CA**

Conducted Phase I environmental investigation at numerous proposed apartment complex site within the Imperial Valley

- **Hwy 98 Improvements, Imperial, CA**

Performed Phase I environmental site assessment for improvements to Hwy 98 for a new intersection in accordance to CalTrans requirements.

Professional Affiliations

American Society of Civil Engineers, Member
American Society of Testing Materials, Member
American Concrete Institute, Certified Examiner
Association of Professional Firms Practicing in the Geosciences, Member

GS Lyon

Steven K. Williams, CEG
Senior Engineering Geologist

Education
M.S. Geology
University of Utah, 1993
B.S. Geology
University of Utah, 1989

Registration
Registered Geologist
Arizona 3759
California 6975
Certified Engineering Geologist
California 2261

Professional Experience

2000 – Present	Project Geologist GS Lyon Consultants, Inc.
1994 - 2000	Staff Geologist GS Lyon Consultants, Inc.
1994	Field Geologist Bureau of Land Management
1991 - 1992	Exploration Geologist Kennecott Corporation

Summary of Experience
Mr. Williams has performed geotechnical investigations in southern California and southwestern Arizona. His field experience includes logging of soil borings and exploratory trenches, collection and documentation of soil samples, collection of field geotechnical data, and monitoring pile driving operations. Mr. Williams is also responsible for preparing computer generated data and figures, drafting and subsequent writing of geotechnical reports for a variety of projects including road improvements, fault studies, liquefaction potential evaluation, foundation preparation, seepage studies, structural distress, and soil investigations. He has performed geotechnical, geologic, and environmental studies for a wide variety of projects including correctional facilities, water and wastewater facilities, schools, residential subdivisions, commercial developments, and landfills throughout southern California and southwestern Arizona.

Mr. Williams also performs Phase I Environmental Site Assessments throughout the Imperial and Coachella Valleys. The scope of work for these projects typically include a site reconnaissance, review of government records pertaining to previous site uses, and preparation of a report identifying potential environmental risks.

He also conducts investigations for the potential of asbestos-containing materials and lead-based paint in old building projects and potential for soil contamination by hydrocarbons, pesticides, and other hazardous materials.

Professional Affiliations
Geological Society of America, Member

Selected Project Experience
- **El Centro Seniors Apartments, El Centro, CA**

Performed Phase I and Phase II environmental site assessments for apartment complex at old school district office site with underground storage tanks.
- **Central Main Canal Seepage Study, Imperial, CA**

Conducted 6-month groundwater seepage study for Imperial Irrigation District to evaluate high groundwater levels in Sandalwood Glen Subdivision
- **Gateway to the Americas, Calexico, CA**

Conducted Phase I ESA, geologic hazards study and geotechnical investigation including liquefaction evaluation for 1,700 acre development associated with new Port of Entry east of Calexico
- **El Centro Magistrate Court, El Centro, CA**

Conducted geotechnical investigation and Phase I ESA for new Federal Magistrate Court building at site with soft soil conditions requiring foundation settlement analysis
- **El Centro Regional Medical Center, El Centro, CA**

Conducted Phase I ESA and geotechnical investigation for 50,000 sf, 2-story addition to the medical center's emergency room, operating rooms, and recovery rooms.
- **Brawley Union High School, Brawley, CA**

Conducted Phase II investigation for PCB and lead contamination of surficial soil and hydrocarbon contamination of subsurface soil of a property proposed for purchase.
- **EW Corporation Site, Westmorland, CA**

Conducted Phase II investigation for hydrocarbon contamination of subsurface soil of a service station site with leaking underground storage tanks prior to property purchase
- **Various Apartment Complexes, Imperial County, CA**

Conducted Phase I environmental investigation at numerous proposed apartment complex site within the Imperial Valley
- **Oasis Elementary School, Mecca, CA**

Conducted PEA environmental investigation for the new Oasis Elementary School prior to construction of school

Peter LaBrucherie, PE
Staff Engineer

Education

B.S. Civil Engineering
California Polytechnic University, San Luis Obispo, 2011

M.S. Civil Engineering
California Polytechnic University, San Luis Obispo, 2012

Registration
Professional Engineer C84812, California

Professional Experience

2013 - Present	Staff Engineer GS Lyon, Inc.
2012 - 2013	Project Engineer BNBuilders.

Summary of Experience
As an Environmental Technician, Mr. LaBrucherie performs Phase I Environmental Site Assessments in Imperial County. The scope of work for these assessments typically includes site reconnaissance, review of government records pertaining to previous site uses, and preparation of a report identifying potential environmental risks.

Selected Project Experience

Seville Solar Farm, Westmorland, CA
Conducted Phase I environmental site assessment for solar project located about 9 miles northwest of Westmorland, Ca.

Clean Harbors Facility, Westmorland, CA
Conducted annual reports which included flood diversion, photo documentation and post closure for waste facility located about 5 miles west of Westmorland, Ca.

Ching Properties, Brawley, CA
Conducted Phase I environmental site assessment for vacant property located in Brawley, Ca.

Chelsea - 470 W. Wall Road, Imperial, CA
Conducted Phase I environmental site assessment for vacant property located in Imperial, Ca. Property is being proposed for apartment complex.

1409 E. Alamo Road, Holtville, CA
Conducted Phase I environmental site assessment for property (mostly vacant with some unused shop buildings and abandoned residential home) located west of Holtville, Ca.

BUSD School Site, Brawley, CA
Conducted Phase I environmental site assessment for school site proposal on a vacant property located in south Brawley, Ca.

CR&R Direct Transfer, El Centro, CA
Conducted Phase I environmental site assessment for commercial property (large warehouse and office with large laydown area) located in El Centro, Ca.

Villa Primavera Apartments, Calexico, CA
Conducted Phase I environmental site assessment for vacant property located in Calexico, Ca.

Paleontological Resources Assessment for the Vikings Solar Energy Storage Project, Imperial County, California

JANUARY 2021

PREPARED FOR

Vikings Energy Farm, LLC.

PREPARED BY

SWCA Environmental Consultants

PALEONTOLOGICAL RESOURCES ASSESSMENT FOR THE VIKINGS SOLAR ENERGY STORAGE PROJECT, IMPERIAL COUNTY, CALIFORNIA

Prepared for

Vikings Energy Farm, LLC.
750 W. Main Street
El Centro, California 92243
Attn: (Jamie Nagel)

Prepared by

Alyssa Bell, Ph.D.

SWCA Environmental Consultants
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San Diego, California 92108
www.swca.com

SWCA Project No. 64085

January 2021

MANAGEMENT SUMMARY

Purpose and Scope: Vikings Energy Farm, LLC. (applicant), retained SWCA Environmental Consultants (SWCA) to conduct a paleontological resources assessment in support of the proposed Viking Solar Energy Storage Project (project) in Imperial County, California. The applicant proposes to develop a 150-megawatt alternating current (MWAC) solar photovoltaic (PV) energy generation project with an integrated 150-megawatt/600-megawatt-hour battery storage project on approximately 603.61 acres of land. The following assessment was conducted to analyze the project's potential impacts on paleontological resources that may be located in the project area, in compliance with the California Environmental Quality Act (CEQA). This report documents the methods, including a confidential records search of the Natural History Museum of Los Angeles County (LACM) and a review of the relevant scientific literature and geologic mapping, used to evaluate the likelihood of paleontological resources within the project area.

Dates of Investigation: SWCA received the results of a museum records search from the LACM on November 19, 2020.

Summary of Findings: Geologic mapping shows the surficial geology of the project area consists of alluvial, lacustrine, and eolian deposits that date from recent times to the late Pleistocene. The LACM records search indicates the museum has a number of localities in similar sediments in the vicinity of the project area. A review of the scientific literature provided context for these and other fossil discoveries. SWCA used these data to assign Society of Vertebrate Paleontology categories for paleontological potential of Low to High, increasing with depth, to the sediments present at the surface of the project area.

Conclusion: Project activities would entail grading and trenching, which could impact sediments with high paleontological potential in the subsurface. Therefore, this report contains measures designed to reduce potential impacts to less-than-significant levels. These measures include implementing a Worker Environmental Awareness Program; and the salvage and museum curation of any significant fossils encountered during project activities. Regulatory compliance and adherence to these measures will reduce impacts of the project on paleontological resources to a less-than-significant level as required by CEQA.

Disposition of Data: This report will be on file with SWCA's San Diego Office.

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INTRODUCTION

Vikings Energy Farm, LLC. (applicant), retained SWCA Environmental Consultants (SWCA) to conduct a paleontological resources assessment in support of the proposed Viking Solar Energy Storage Project (project) in Imperial County, California. The applicant proposes to develop a 150-megawatt alternating current (MWAC) solar photovoltaic (PV) energy generation project with an integrated 150-megawatt/600-megawatt-hoursbattery storage project on approximately 603.61 acres of land. The following assessment was conducted to analyze the project's potential impacts on paleontological resources that may be located in the project area, in compliance with the California Environmental Quality Act (CEQA). This report documents the methods, including a confidential records search from the Natural History Museum of Los Angeles County (LACM) and a review of the relevant scientific literature and geologic mapping, used to evaluate the likelihood of paleontological resources within the project area.

SWCA Paleontological Principal Investigator Alyssa Bell, Ph.D., conducted the paleontological assessment presented herein and authored this report. SWCA Paleontological Principal Investigator Russell Shapiro, Ph.D., reviewed the report. Ian Todd served as project manager. Figures were generated by SWCA GIS technician Kevin Howen. Copies of the report are on file with SWCA's San Diego Office.

PROJECT DESCRIPTION

The project site is at the intersection of Nelson Pit Road and Graeser Road, approximately 5.5 miles east of the City of Holtville in Section 36 of Township 15 South and Range 16 East of the San Bernardino Base and Meridian of the Holtville East 7.5-minute topographic quadrangle (**Error! Reference source n ot found.**). The project area is located on Imperial County Assessor's Parcel Numbers (APNs) 050-070-018-000 (approximately 480.00 acres), 050-070-019 (approximately 80.00 acres), and 050-070-021 (approximately 43.61 acres), owned by RL&R Strahm, ARB Inc., and the County of Imperial, respectively.

The project proposes to utilize either thin film or crystalline solar photovoltaic (PV) technology modules mounted on fixed frames or horizontal single-axis tracker (HSAT) systems. The fixed frame PV module arrays would be mounted on racks that would be supported by driven piles. The fixed PV modules would be arranged in arrays spaced approximately 15 to 25 feet apart (pile to pile) to maximize performance and to allow access for panel cleaning (if necessary). These arrays would be separated from each other and the perimeter security fence by up to 30-foot-wide interior roads.

Electricity generated by the PV modules would be collected by a direct current (DC) collection system routed underground in trenches. This DC power would be delivered to one of the pad-mounted inverters in weatherproof enclosures located within the arrays. Underground or overhead 12.5-kilovolt (kV) or 34.5-kV collection lines would transmit the electricity to the new project substation. The substation would be constructed on the southern boundary of APN 050-070-019. A new interconnection switching station would be constructed at the southern boundary of APN 050-070-019, immediately adjacent to the project substation. The project substation and interconnection switching station would be connected via a single overhead 230-kV line, a tie line. The interconnection switching station would be enclosed within its own fence.

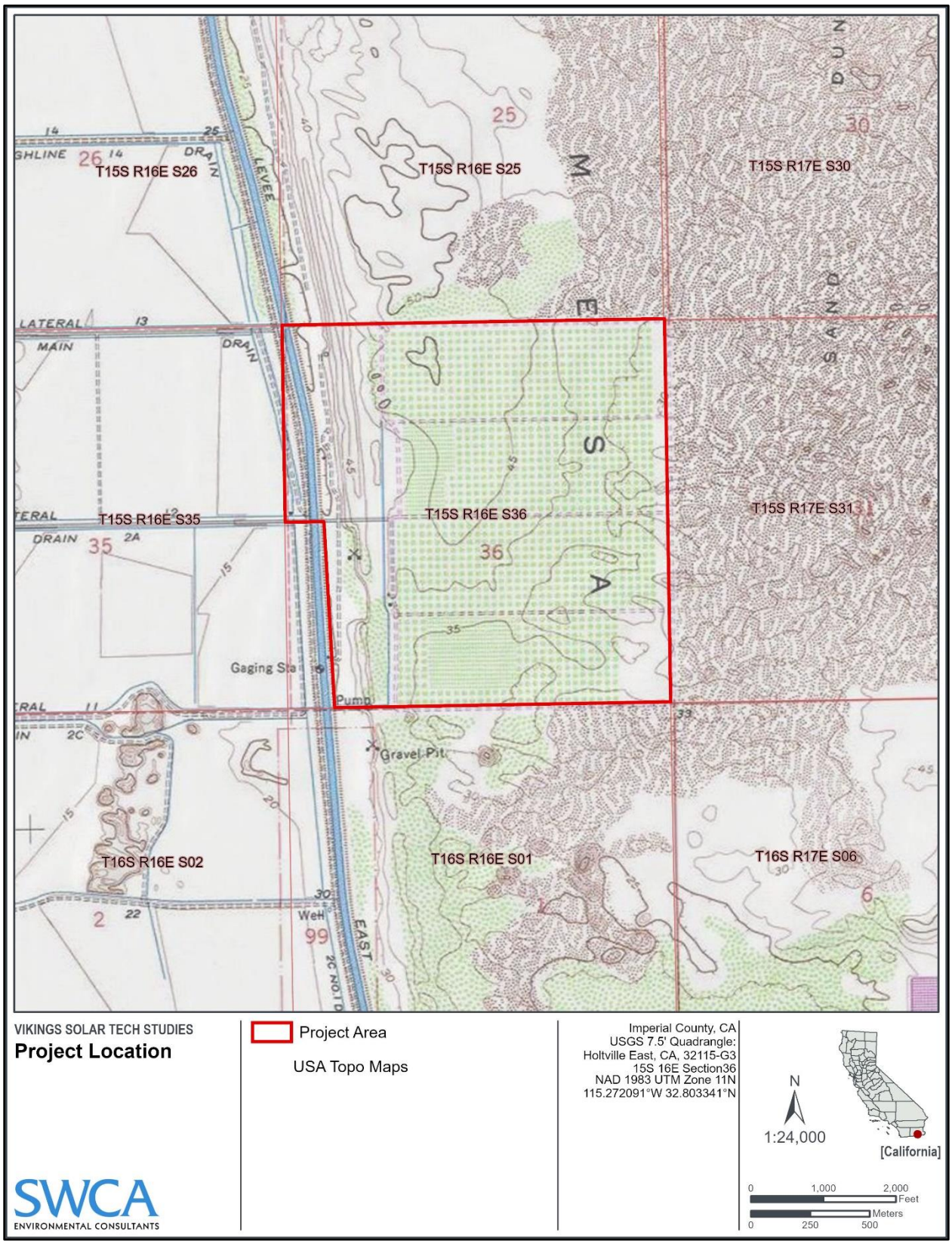

Figure 1. Project location.

To connect to the project's interconnection facilities, the medium voltage power produced by the project would be conveyed underground, or above ground where necessary, to cross over any sensitive site features. Distribution from the site would be via an overhead connection. The electrical energy produced by the project would be conducted through the project interconnection facilities to the proposed 230-kV generator intertie ("gen-tie") line and delivered to the existing IID approved point of interconnection (POI) on the 230-kV "KN & KS" Line. The proposed battery energy storage system (BESS or ESS) would be constructed adjacent to the project's solar facilities and would consist of either lithium ion (Li-ion) or flow batteries. Underground trenches with conduits would be used to connect the batteries to the control and monitoring systems, and inverters would be used to convert the PV-produced DC power to alternating current power.

The piles for the solar arrays will be driven into the ground to a depth of approximately four feet by vibratory pile hammer. Trenching for underground electrical lines will be to a depth of approximately 48 inches within fallow agricultural disturbance.

Six-foot-high security fencing would be installed around the perimeter of each of the project sites at the commencement of construction, and site access would be limited to authorized site workers.

REGULATORY SETTING

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under federal and state laws and regulations. This study satisfies project requirements in accordance with state regulations and was conducted as a means of characterizing the existing conditions consistent with the application of the screening criteria defined in Appendix G of the CEQA Guidelines (as amended December 28, 2018). This analysis also complies with guidelines and criteria specified by the Society of Vertebrate Paleontology (2010).

State Regulations

California Environmental Quality Act

The California Environmental Quality Act (CEQA) is the principal statute governing environmental review of projects occurring in the state and is codified at Public Resources Code (PRC) Section 21000 et seq. CEQA requires lead agencies to determine if a proposed project would have a significant effect on the environment, including significant effects on paleontological resources. Guidelines for the Implementation of CEQA, as amended December 1, 2016 (Title 14, Chapter 3, California Code of Regulations 15000 et seq.), define procedures, types of activities, persons, and public agencies required to comply with CEQA. Section VII(f) of the Environmental Checklist asks whether a project would directly or indirectly destroy a unique paleontological resource and result in impacts to the environment.

Public Resources Code Section 5097.5

Requirements for paleontological resource management are included in the PRC Division 5, Chapter 1.7, Section 5097.5, and Division 20, Chapter 3, Section 30244, which states:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands,

> except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

These statutes prohibit the removal, without permission, of any paleontological site or feature from lands under the jurisdiction of the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, local agencies are required to comply with PRC 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others. PRC Section 5097.5 also establishes the removal of paleontological resources as a misdemeanor and requires reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, and district) lands.

METHODS

This section presents an overview of the methodology used to identify the potential for paleontological resources within the project area. This report is based on a desktop review of available scientific literature, geologic maps, and a records search from the Natural History Museum of Los Angeles County (LACM). This report conforms to industry standards as developed by the Society of Vertebrate Paleontology (SVP) (2010) and described in Murphey et al. (2019). The purpose of this analysis is to 1) determine whether any previously recorded fossil localities occur in the project area; 2) if so, assess the potential for these localities to be disturbed during construction; and 3) evaluate the paleontological potential of the project area.

Professional Standards

The SVP has established standard guidelines that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation (2010). Most practicing professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most state regulatory agencies with paleontological laws, ordinances, regulations, and standards accept and use the professional standards set forth by the SVP.

As defined by the SVP (2010:11), significant paleontological resources are:

> fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years).

Numerous paleontological studies have developed criteria for the assessment of significance for fossil discoveries (e.g., Eisentraut and Cooper 2002; Murphey et al. 2019; Scott and Springer 2003). In general, these studies assess fossils as significant if one or more of the following criteria apply:

1. The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct;
2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;

3. The fossils provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas;
4. The fossils demonstrate unusual or spectacular circumstances in the history of life; or
5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

A geologic unit known to contain significant fossils is considered sensitive to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either disturb or destroy fossil remains directly or indirectly. This definition of sensitivity differs fundamentally from the definition for archaeological resources as follows:

> It is extremely important to distinguish between archaeological and paleontological (fossil) resource sites when defining the sensitivity of rock units. The boundaries of archaeological sites define the areal extent of the resource. Paleontological sites, however, indicate that the containing sedimentary rock unit or formation is fossiliferous. The limits of the entire rock formation, both areal and stratigraphic, therefore define the scope of the paleontological potential in each case. [SVP 1995]

Many archaeological sites contain features visually detectable on the surface. In contrast, fossils are often contained within surficial sediments or bedrock, and are therefore not observable or detectable unless exposed by erosion or human activity.

In summary, paleontologists cannot know either the quality or quantity of fossils prior to natural erosion or human-caused exposure. As a result, even in the absence of fossils on the surface, it is necessary to assess the sensitivity of rock units based on their known potential to produce significant fossils elsewhere within the same geologic unit (both within and outside the study area), a similar geologic unit, or based on whether the unit in question was deposited in a type of environment known to be favorable for fossil preservation. Monitoring by experienced paleontologists greatly increases the probability that fossils will be discovered during ground-disturbing activities and that, if these remains are significant, successful mitigation and salvage efforts may be undertaken to prevent adverse impacts to these resources.

Paleontological Potential

Paleontological potential is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In its "Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources," the SVP (2010:1–2) defines four categories of paleontological sensitivity (potential) for rock units: high, low, undetermined, and no potential:

> **High Potential**. "Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Rock units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e.g., ash or tephra), and some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e.g., middle Holocene and older, fine-grained fluvial sandstone, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstone, fine-grained marine sandstone, etc.). Paleontological potential consists of both a) the potential for yielding abundant or significant vertebrate fossils or

for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data. Rock units which contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and rock units which may contain new vertebrate deposits, traces, or trackways are also classified as having high potential."

Low Potential. "Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule, e.g. basalt flows or Recent colluvium. Rock units with low potential typically will not require impact mitigation measures to protect fossils."

Undetermined Potential. "Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy."

No Potential. "Some rock units have no potential to contain significant paleontological resources, for instance high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require no protection or impact mitigation measures relative to paleontological resources." (SVP 2010:1–2)

RESULTS

Geological Setting

The project area is located in the Colorado Desert geomorphic province. This area is bounded by the active San Andreas Fault on the west and the southern extension of the Mojave Desert on the east. The dominant feature is a tectonically down-dropped graben, the Salton Trough, that is largely occupied by the Salton Sea today, and ancient Lake Cahuilla in the past (Norris and Webb 1990). The Salton Trough is an active rift valley that includes the Imperial Valley in California and the west half of the Mexicali Valley and the Colorado River delta in Mexico. Formed by rifting along the East Pacific Rise, the structure of the Salton Trough today is largely a product of ongoing tectonic activity within the San Andreas fault system (Alles 2004; Buckles et al. 2002). The strike-slip fault system runs from central to southern California and forms the eastern wall of the Salton Trough. The San Andreas fault system terminates at the Brawley seismic zone, a spreading center in the southeastern corner of the Salton Sea (Alles 2004). This spreading center accounts for all the active seismicity in the region, is responsible for a large number of young volcanic and geothermal features, and formed pull-apart basins on both sides of the international border (Norris and Webb 1990). The western wall of the Salton Trough is formed by the highly active San Jacinto fault zone and the Elsinore fault zone, which is historically much less active than either the San Andreas or San Jacinto fault zones.

The divergence along the East Pacific Rise that created the Gulf of California began in the late Miocene, between 5 and 10 million years ago (Ma). This activity coincided with an uplift of the Colorado Plateau, which strengthened the flow of the Colorado River, allowing it to carry more sediment. The Colorado

River eventually dammed the entrance of the gulf and created the Salton Trough. The trough was episodically inundated by marine water during the Pliocene and Pleistocene and fresh water during the Holocene, the last lake cycle of which formed Lake Cahuilla, believed to have existed intermittently from 470 years before present (BP) to approximately 6,000 years BP (Van de Kamp 1973; Waters 1983; Whistler et al. 1995). Around the margins of the Salton Trough, at approximately 40 feet above mean sea level, the ancient highstand shoreline of Lake Cahuilla is visible. At this elevation, the water depth of Lake Cahuilla would have been approximately 300 feet. The 40-foot level of Lake Cahuilla was most likely established by the crest of the Colorado River delta. Evidence for this lake level is visible at Travertine Rock on the western margin of the Salton Trough, where 30-inch-thick travertine deposits indicate that the 40-foot water level persisted for a long period of time. Older discontinuous terrace deposits within the Salton Trough indicate the existence of other large lakes that may have been connected to the Gulf of California prior to the existence of Lake Cahuilla. The Salton Sea, which occupies the center of the Salton Trough today, is not a remnant of Lake Cahuilla, but resulted from an irrigation canal accident that diverted the full flow of the Colorado River into the Salton Trough for two years between 1905 and 1907 (Alles 2004).

The geology in the project area has been mapped by Strand (1962) at a scale of 1:250,000 (Figure 2). The surficial geology of the project area consists of younger alluvial sediments (Qal), lacustrine sediments (Ql), and dune deposits (Qs). These units and their paleontological potential are discussed below and shown in Table 1. Middle Holocene and older sediments in the subsurface of the project area are known to preserve fossil resources in the Salton Trough and Imperial County. The records of the LACM indicate they have several fossil localities represented in their collection from this area. The closest of these is from Holtville, approximately 10 kilometers to the west of the project area, where two invertebrate localities have been recorded. Other fossil localities in Pleistocene-aged sediments in the vicinity of the project area include Mt. Signal, the Yuha basin, the Anza-Borrego Desert, and south of Salton City (Table 2).

Younger alluvium (Qal). Younger alluvium dates from recent times and consists of unconsolidated gravel, sand, silt, and clay that is uncemented, derived as eroded sediment deposited by streams (Strand 1962). Younger alluvium occurs in the central portion of the project area. As defined by the SVP (2010), these sediments are too young to preserve fossils in the upper layers (i.e., under 5,000 years old); however, they increase in age with depth and therefore may preserve fossil resources in deeper layers.

Older alluvial sediments have a rich fossil history in southern California (Jefferson 1991a and b; McDonald and Jefferson 2008; Miller 1971; Reynolds and Reynolds 1991; Scott 2010; Scott and Cox 2008). The most common Pleistocene terrestrial mammal fossils include the bones of mammoth, bison, deer, and small mammals, but other taxa, including horse, lion, cheetah, wolf, camel, antelope, peccary, mastodon, capybara, and giant ground sloth, have been reported (Graham and Lundelius 1994), as well as reptiles such as frogs, salamanders, and snakes (Hudson and Brattstrom 1977). In addition to illuminating the striking differences between Southern California in the early Holocene to Pleistocene and today, this abundant fossil record has been vital in studies of extinction (e.g., Barnosky et al. 2004; Sandom et al. 2014; Scott 2010), ecology (e.g., Connin et al. 1998), and climate change (e.g., Roy et al. 1996). While the exact depth to older alluvium is not known in the project area, it is reasonable to believe this transition would have occurred by 1.5 m (5 feet) depth below ground surface (bgs), based on other localities in the region. Therefore, the alluvial sediments present at the project area have Low to High paleontological potential, increasing with depth.

Lacustrine Deposits (Ql). Lacustrine deposits date from recent times to the late Pleistocene and consist of sand, silt, and clay deposited by Lake Cahuilla and as modern playa deposits (Strand 1962). These deposits are found at the surface in the western project area. Like the younger alluvium described above, these sediments are too young at the surface to preserve fossil

resources; however, they increase in age with depth and therefore may preserve fossil resources in deeper layers. Additionally, these beds also likely underlie the younger alluvium and dune sand present in the central and eastern project area.

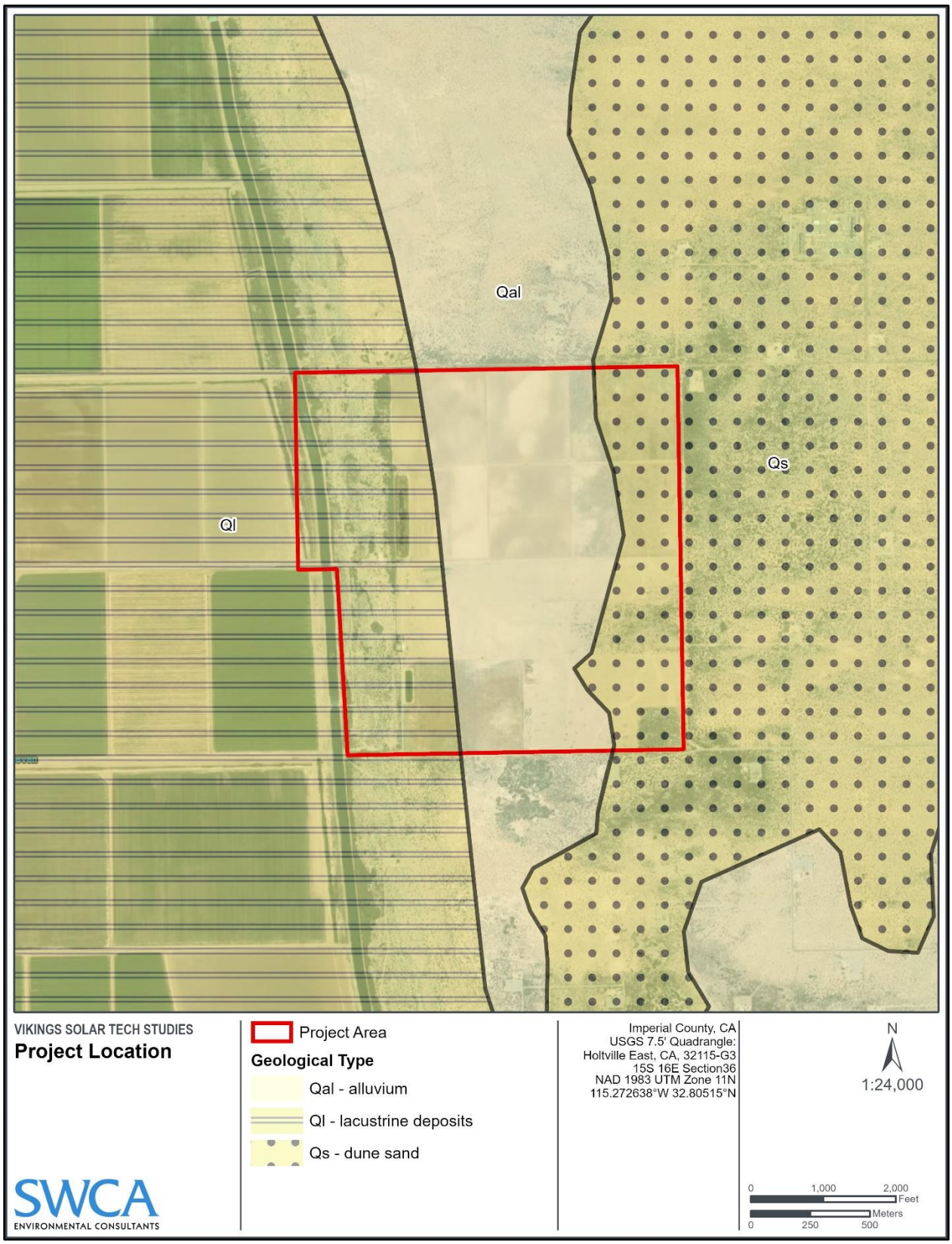

Figure 2. Geological map of the project area, after Strand (1962).

The fluvial and lacustrine Lake Cahuilla Beds comprise a thick sequence of tan and gray fossiliferous clay, silt, sand, and gravel in conjunction with alluvium (Morton 1966). The fluvial component of the Lake Cahuilla Beds was deposited during intervening lake lowstands (Whistler et al. 1995), and are generally composed of thinly bedded, poorly sorted, fine-grained, light grayish-brown, fluvial sandstone. The lacustrine mudstone is generally massive, poorly sorted sand and silt that is often highly bioturbated.

In addition to the fauna described above for older alluvial deposits, lacustrine deposits in the project area are well known for preserving a variety of aquatic invertebrate and vertebrate taxa. The most abundant molluscan taxa, *Tryonia protea, Fontelicella longinqua,* and *Physa humerosa,* are characteristic of shallow water lakes in the Colorado Desert with sandy and muddy bottoms and abundant aquatic vegetation (Bowersox 1974). Fossil remains of diatoms, land plants, sponges, ostracods, mollusks, fish, and small terrestrial vertebrates have been recovered from the Lake Cahuilla Beds (Whistler et al. 1995). In their study at La Quinta, Whistler et al. (1995) reported that the terrestrial vertebrate remains they collected include small desert animals very similar to the fauna that currently inhabit the Salton Trough. Species that required aquatic habitats, such as frogs, toads, aquatic turtles, watersnakes, waterfowl, or muskrats among others, were absent from the sample, suggesting that at that particular time, Lake Cahuilla did not persist long enough for these species to migrate to the lake from Colorado River habitats (Whistler et al. 1995). Due to the abundant recovery of significant fossils from Lake Cahuilla Beds from the middle and early Holocene, this geologic unit is considered to have Low to High paleontological potential, increasing with depth.

Dune Sand (Qs). Dune sand dates from recent times and consists of unconsolidated, well-sorted fine- and medium-grained sands deposited through eolian processes (Strand 1962). Dune sand occurs in the eastern portion of the project area. As defined by the SVP (2010), these sediments are too young to preserve fossils in the upper layers (i.e., under 5,000 years old); however, they increase in age with depth and therefore may preserve fossil resources in deeper layers. Older dune sands may preserve a wide range of terrestrial fossils, such as described above for older alluvium. Therefore, dune sands have Low to High paleontological potential, increasing with depth.

Table 1. Geologic Units Underlying the Project Area

Formation	Abbreviation (Figure 2)	Paleontological Potential	Presence in the Project Area
Alluvium	Qal	Low to High, increasing with depth	Surface – central project area
Lacustrine Deposits	Ql	Low to High, increasing with depth	Surface – western project area; Subsurface – throughout project area
Dune Sand	Qs	Low to High, increasing with depth	Surface – Eastern project area

Table 2. LACM Fossil Localities Nearest the APE

Locality Number	Location	Formation	Age	Taxa
LACM IP 4774, 4780	Holtville (more specific data not available)	Unknown formation	Pleistocene	Invertebrates
LACM VP 1719	Mt. Signal; Imperial County	Unknown Formation (gravel pit)	Pleistocene	Horse (Equidae)
LACM VP 1718	Yuha Basin	Palm Spring Formation (sandstone concretion)	Pleistocene	Horse (Equidae)

Locality Number	Location	Formation	Age	Taxa
LACM VP 6733, 5850	Superstition Hills, Anza-Borrego Desert	Brawley Formation (Coarse dark brown sandstone)	Pleistocene	Camel family (*Lamini*); other unidentified vertebrates
LACM VP 1726	16 miles south of Salton City, 1 block west of Highway 99	Unknown formation	Pleistocene	Ground sloth (*Megalonyx*)
LACM VP 4098-4100	Yuha Basin	Unknown formation	Pleistocene	Cat (*Felis*); Camel family (Camelidae); Carnivore (Carnivora); horse (*Equus*)

CONCLUSION

While no previously recorded paleontological resources have been identified within the project area, the proximity of numerous fossil localities in the vicinity of the project area indicates the younger alluvium, lacustrine deposits, and dune sands present in the project area have Low to High paleontological potential, increasing with depth. While the exact depth at which the transition from Low to High potential occurs is not known in the project area, the review of scientific literature presented here indicates it may be as shallow as 1.5 m (5 feet) bgs. Should fossils be encountered during grading and trenching, or other soil-disturbing activities from the project, they would be at risk for damage or destruction from construction activities, which would constitute an impact under CEQA. However, the depth of vibratory pile driving, grading, and trenching for underground electrical lines for the project is approximately 4 feet below the surface. Therefore, the project is unlikely to encounter fossils during construction. In the event that a previously undiscovered fossil is uncovered by the project, the implementation of appropriate mitigation measures will ensure that such fossils are assessed for significance and, if significant, salvaged and curated with an accredited repository. This will further reduce the less-than-significant impacts to fossil resources from the project to a less-than-significant level.

Accordingly, SWCA recommends the mitigation measures outlined below. The mitigation measures have been developed in accordance with, and incorporate the performance standards of, the SVP (2010) and industry best practices (Murphy et al. 2019). These measures will further reduce already less-than-significant impacts to paleontological resources.

> **Pal-1:** The Project Paleontologist will develop a Worker's Environmental Awareness Program (WEAP) to train the construction crew on the legal requirements for preserving fossil resources as well as procedures to follow in the event of a fossil discovery. This training program will be given to the crew before ground-disturbing work commences and will include handouts to be given to new workers as needed.
>
> **Pal-2:** In the event of a fossil discovery by a member of the construction crew, all work will cease in a 15-m (50-foot) radius of the find while the Project Paleontologist assesses the significance of the fossil and documents its discovery. Should the fossil be determined significant, it will be salvaged following the procedures and guidelines of the SVP (2010). Recovered fossils will be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis, and deposited in a designated paleontological curation facility. The most likely repository is the LACM. A repository will be identified and a curatorial arrangement will be signed prior to collection of the fossils.

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APPENDIX A

Natural History Museum of Los Angeles County
Paleontological Records Search Results

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

November 19, 2020

SWCA Environmental Consultants

Attn: Alyssa Bell

re: Paleontological resources for the Viking Solar Project, 64085

Dear Alyssa:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the Viking Solar project area as outlined on the portion of the Holtville East USGS topographic quadrangle map that you sent to me via e-mail on November 11, 2020. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County.

Locality Number	Location	Formation	Taxa	Depth
LACM IP 4774, 4780	Holtville (more specific data not available)	unknown formation, Pleistocene	Invertebrates	Unknown
LACM VP 1719	Mt. Signal; Imperial County	Unknown Formation (Pleistocene, gravel pit)	Horse (Equidae)	Unknown
LACM VP 1718	Yuha basin	Palm Spring Formation (sandstone concretion)	Horse (Equidae)	Unknown
LACM VP 6733, 5850	Superstition Hills, Anza-Borrego Desert	Brawley Formation (Coarse dark brown sandstone)	Camel family (*Lamini*); other unidentified vertebrates	Unknown
LACM VP 1726	16 miles south of Salton City, 1 block west of highway 99	Unknown Formation (Pleistocene)	Ground sloth (*Megalonyx*)	Unknown

LACM VP 4098-4100	Yuha Basin	Unknown Formation (Pleistocene)	Cat (*Felis*); Camel family (Camelidae); Carnivore (Carnivora); horse (*Equus*)	Unknown

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

This records search covers only the records of the Natural History Museum of Los Angeles County ("NHMLA"). It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,

Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

California Land Evaluation and Site Assessment for the Vikings Solar Energy Storage Project, Imperial County, California

DECEMBER 2020

PREPARED FOR

Vikings Energy Farm, LLC

PREPARED BY

SWCA Environmental Consultants

CALIFORNIA LAND EVALUATION AND SITE ASSESSMENT FOR THE VIKINGS SOLAR PROJECT, IMPERIAL COUNTY, CALIFORNIA

Prepared for

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Attn: Jamie Nichole Nagel

Prepared by

Cassidy Williams, B.S.

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SWCA Project No. 64085

December 2020

CONTENTS

Appendices

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1 INTRODUCTION

SWCA Environmental Consultants (SWCA) prepared this California Land Evaluation and Site Assessment (LESA) to provide agencies and decision makers with a concise and accurate assessment to assist with the evaluation of the potentially significant effects on the environment associated with the conversion of agricultural land considered in the environmental review process, including the California Environmental Quality Act (CEQA). The LESA is based on the Land Evaluation & Site Assessment Model produced by the California Department of Conservation (DOC) in 1997 (California Agricultural LESA Model) to provide lead agencies with an optional methodology to ensure that potentially significant effects related to agricultural land conversions are quantitatively and consistently considered in the environmental review process. The California Agricultural LESA Model evaluates measures of soil resource quality, a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, the factors are rated, weighted, and combined, resulting in a single numeric score. The project score becomes the basis for making a determination of a project's potential significance.

The LESA performed for the Vikings Solar Energy Storage Project (Project) resulted in a Land Evaluation score of 21.42 and a Site Assessment score of 26.25, for a cumulative total of 47.67 points out of 100. Based on the California Agricultural LESA Model methodology and final score, the Project site is considered to represent a significant agricultural resource and the Project would have the potential to result in significant impacts on agricultural resources.

2 PROJECT SETTING

Vikings Energy Farm, LLC is proposing to develop a nominal 150-megawatt alternating current (MWAC) solar photovoltaic (PV) energy generation Project with an integrated 150 MW/600 megawatt per hour (MWh) battery storage project on approximately 603.61 acres of land in Imperial County, California. The Project would be located at the intersection of Nelson Pit Road and Graeser Road, approximately 5.5 miles east of the city of Holtville. The Project would be located on Imperial County Assessor's Parcel Numbers (APNs) 050-070-018-000 (approximately 480.00 acres), 050-070-019 (approximately 80.00 acres), and 050-070-021 (approximately 43.61 acres) (Figures 1 and 2).

Favorable climate, productive soils, and the availability of irrigation water have permitted Imperial County to become a leading producer of agricultural products. Irrigation is critical for crop production in Imperial County. Water for irrigation in the county is diverted from the Colorado River at the Palo Verde Diversion Dam north of Blythe by the Palo Verde Irrigation District, and at Imperial Dam through the All-American Canal headworks and desilting basins by the Imperial Irrigation District (IID) and the Bard Irrigation District for use in the Yuma, Bard, Imperial, and Coachella Valleys. In the Imperial Valley, approximately 2.9 million acre-feet of water is delivered annually to over 500,000 acres of agricultural lands via an elaborate gravity-flow system (County of Imperial 2015).

3 PURPOSE OF THIS CALIFORNIA LAND EVALUATION AND SITE ASSESSMENT

The purpose of this LESA is to provide agencies and decision makers with a concise and accurate assessment to assist with the evaluation of the potentially significant effects on the environment associated with agricultural land conversion considered in the environmental review process, including CEQA.

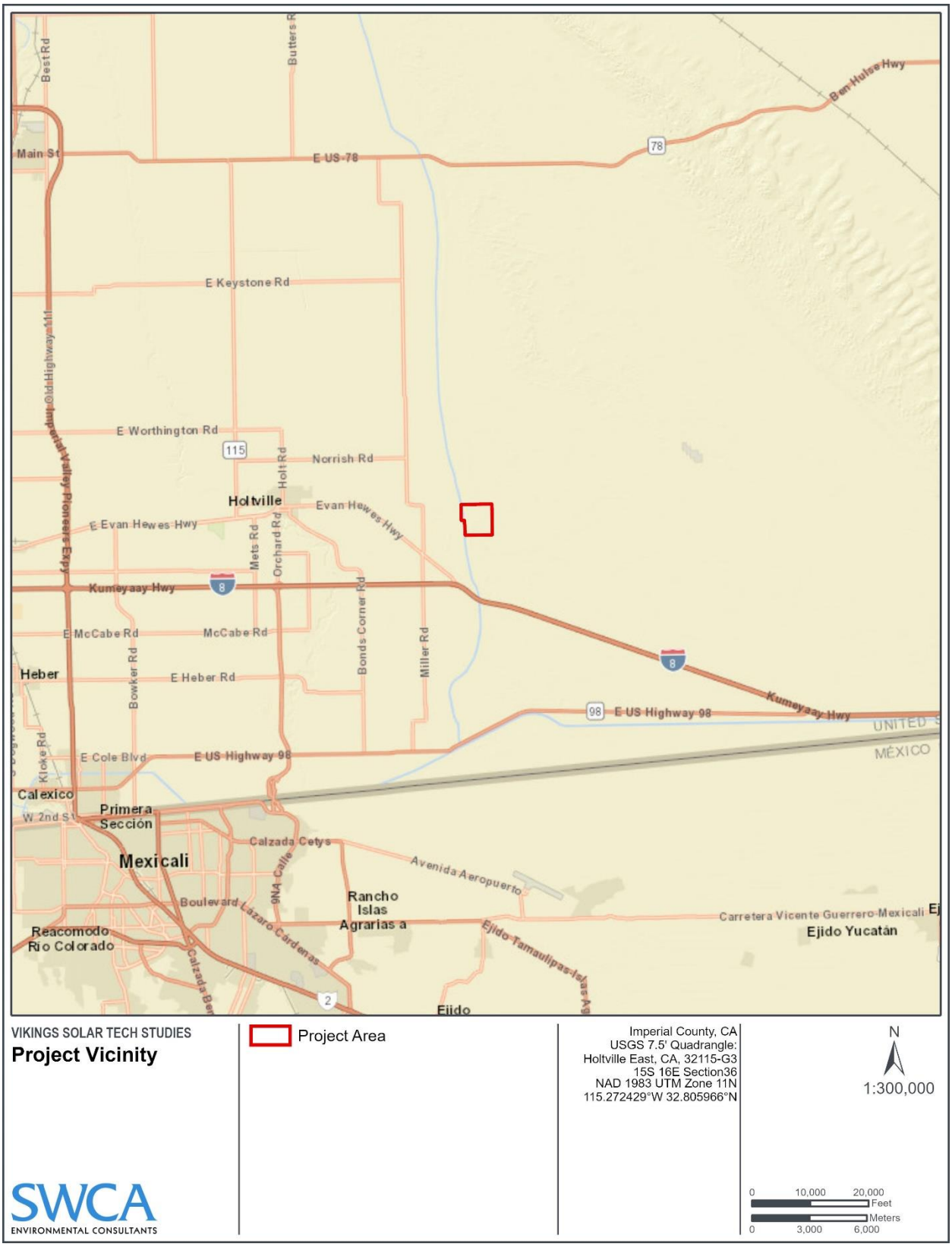

Figure 1. Project vicinity map.

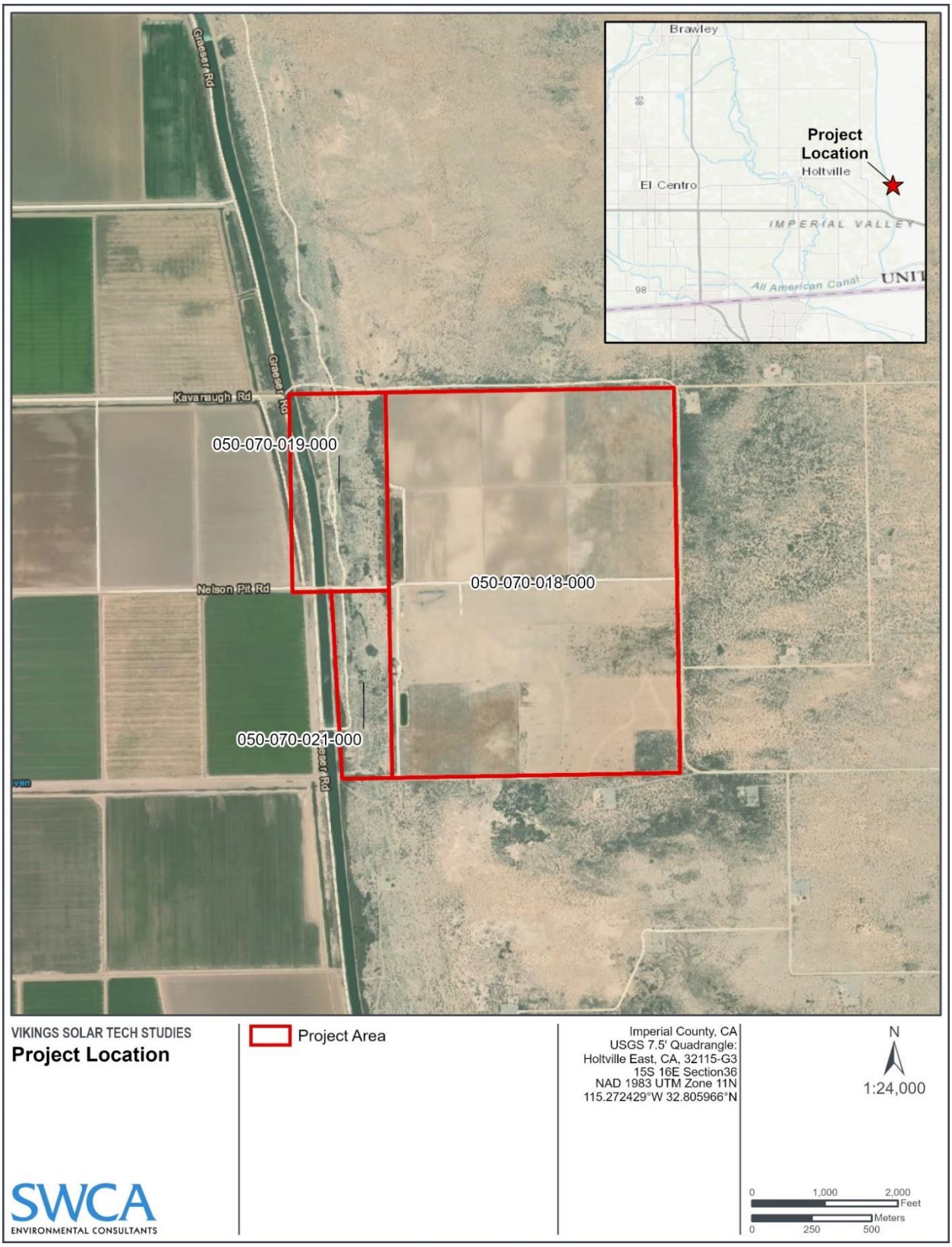

Figure 2. Project location map.

The California Agricultural LESA Model is a point-based approach that is generally used for rating the relative value of agricultural land resources. In basic terms, a LESA model is created by defining and measuring two separate sets of factors. The first set, Land Evaluation, includes factors that measure the inherent soil-based qualities of land as they relate to agricultural suitability. The second set, Site Assessment, includes factors that are intended to measure social, economic, and geographic attributes that also contribute to the overall value of agricultural land (DOC 1997). The factors are then weighted relative to one another and combined, resulting in a single numeric score for a given project, with a maximum attainable score of 100 points. It is this project score that becomes the basis for making a determination of a project's potential significance, based upon a range of established scoring thresholds (DOC 1997).

This document and associated analysis were prepared using the instructions and guidance within the *Land Evaluation and Site Assessment (LESA) Instruction Manual* (DOC 1997).

4 PROJECT DESCRIPTION

As stated in the Section 2, Project Setting, Vikings Energy Farm LLC is proposing to develop a nominal 150 MWAC solar PV energy generation project with an integrated 150 MW/600MWh battery storage Project on approximately 603.61 acres of land. The Project proposes to utilize either thin film or crystalline solar PV technology modules mounted either on fixed frames or horizontal single-axis tracker (HSAT) systems.

The proposed battery energy storage system (BESS or ESS) would be constructed adjacent to the Project's solar facilities and would consist of either lithium ion (Li-ion) or flow batteries. The batteries will either be housed in storage containers or buildings fitted with heating, ventilation, and air conditioning (HVAC) and fire suppression systems as necessary, depending on the final selection of battery technology. Inside the housing, the batteries will be placed on racks, the orientation of which depends on the type of housing. Underground trenches with conduits will be used to connect the batteries to the control and monitoring systems, and inverters to convert the PV-produced direct current (DC) power to AC power.

The Project site would include one primary access driveway located off of East Nelson Road, bisecting the Project area and a secondary access driveway (if required) with a to-be-determined location. This driveway would be provided with minimum 30-foot double swing gates with a "Knox Box" for keyed entry. Internal to the Project site, up to 30-foot-wide roads would be provided between the PV arrays, as well as around the perimeter of each section of arrays inside the perimeter security fence to provide access to all areas of each section for maintenance and emergency vehicles.

Six-foot-high security fencing would be installed around the perimeter of each of the Project sites at the commencement of construction, and site access would be limited to authorized site workers. In addition, a motion detection system and closed-circuit camera system may also be installed. The site would be remotely monitored 24 hours per day, 7 days per week. In addition, routine unscheduled security rounds may be made by the security team monitoring the site.

Once construction is completed, the Project would be remotely controlled. No employees would be based at the Project sites. Primary security-related monitoring would be done remotely. Security personnel may conduct unscheduled security rounds and would be dispatched to the site in response to a fence breach or other alarm. Site maintenance workers may access the Project site periodically to clean the panels and maintain the equipment and Project area. The public would not have access to the facility. Access to the Project site would be infrequent and limited to authorized personnel.

Periodic washing of the PV modules is not expected to be necessary but could be needed to remove dust in order to maintain power generation efficiency. The amount of water needed for this purpose is conservatively estimated at 5 acre-feet per washing, with up to two washings per year, or a total of up to 10 acre-feet per year. This water would be water purchased from the IID. Each washing is expected to take 1 to 2 weeks to complete. Vegetation growing on the site would periodically (approximately every 3 months) be removed manually and/or treated with herbicides.

5 REGULATORY SETTING

5.1 Federal

5.1.1 *Farmland Protection Policy Act (7 USC Section 4201)*

The Farmland Protection Policy Act (FPPA) (7 United States Code [USC] Section 4201) was passed by U.S. Congress in 1994 with the intention to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that, to the extent possible, federal programs are administered to be compatible with state and local units of government and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every 2 years.

The FPPA does not authorize the Federal Government to regulate the use of private or nonfederal land or, in any way, affect the property rights of owners. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land (NRCS 2019).

5.2 State

5.2.1 *California Department of Conservation Farmland Mapping and Monitoring Program*

The DOC Division of Land Resource Protection developed the Farmland Mapping and Monitoring Program (FMMP) in 1984 to analyze impacts to California's agricultural resources. Land is rated based on the land capability classification system, California's Revised Storie Index, and recent land use. Land designations include:

- **Prime Farmland (P):** Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- **Farmland of Statewide Importance (S):** Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- **Unique Farmland (U):** Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the last 4 years prior to the mapping date.

- **Farmland of Local Importance (L):** Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. In Imperial County, Farmland of Local Importance is defined Unirrigated and uncultivated lands with Prime and Statewide soils.
- **Grazing Land (G):** Land on which the existing vegetation is suited to the grazing of livestock.
- **Urban and Built-Up Land (D):** Land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
- **Other Land (X):** Land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

The FMMP maps are updated every 2 years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance (DOC 2019).

5.2.2 *California Land Conservation Act of 1965*

The California Land Conservation Act of 1965, also known as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments, which are much lower than normal because they are based upon farming and open space uses as opposed to full market value.

For the purposes of this LESA evaluation, all land under an active Williamson Act contract is considered Protected Resource Land.

5.3 Imperial County

5.3.1 *Imperial County General Plan Agricultural Element*

The *Imperial County General Plan Agricultural Element* is intended to be a comprehensive, internally consistent, and long-term expression of community goals with regard to agriculture and serves as the foundation for development decisions by local authorities (County of Imperial 2015). The Agricultural Element describes the status and trends of agricultural resources within the planning area and identifies goals, objectives, policies, measures, and timeframes related to conserving agricultural lands while minimizing or avoiding conflicts with urban and other land uses.

The Agricultural Element identifies multiple important trends and/or issues related to future agricultural production in Imperial County, including, but not limited to, loss of important farmland to urban and other uses, water conservation and the future availability of adequate quantities of irrigation water, salinity/selenium levels in the Salton Sea, and a need for balancing renewable energy development and continued agricultural operations.

The Agricultural Element identifies 11 goals relative to agricultural production within the unincorporated areas of the county. These goals, together with objectives and policies that stem from them, provide

direction for private development as well as government actions and programs. Each goal is identified below:

- **Goal 1:** All Important Farmland, including the categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, as defined by Federal and State agencies, should be reserved for agricultural uses.
- **Goal 2:** Adopt policies that prohibit "leapfrogging" or "checkerboard" patterns of nonagricultural development in agricultural areas and confine future urbanization to adopted Sphere of Influence areas.
- **Goal 3:** Limit the introduction of conflicting uses into farming areas, including residential development of existing parcels which may create the potential for conflict with continued agricultural use of adjacent property.
- **Goal 4:** Maximize the inherent productivity of Imperial County's agricultural resources by ensuring future availability of adequate and affordable irrigation water and by managing water such that it is used effectively and not wasted.
- **Goal 5:** Improve the quality of irrigation water runoff and reduce the extensive use of pesticides and other chemicals to minimize impacts to downstream water bodies, wetland habitats, and the overall environment.
- **Goal 6:** Strive to prevent the adoption of inappropriate, unnecessary, and restricting Federal, State, and local regulations that threaten the ability of farmers and livestock producers to profitably produce food and fiber for the nation.
- **Goal 7:** Establish positive relations with the general public and inform the general public that the County's entire economy is intricately dependent upon agricultural production.
- **Goal 8:** Improve the financial viability of the agricultural sector of Imperial County's economy through actions that have the potential to improve yields and reduce costs.
- **Goal 9:** Increase the value of locally produced agricultural commodities and improve and stabilize the County's economy by promoting local agricultural packaging and processing operations.
- **Goal 10:** Encourage the continuation and expansion of cattle/dairy production on agricultural land.
- **Goal 11:** Encourage the continuation and expansion of aquacultural production.

5.3.2 *Right-To-Farm Ordinance*

On August 7, 1990, the County of Imperial Board of Supervisors approved the "Right-to-Farm" Ordinance, which required a notice be mailed to owners of real property within Imperial County, mailed to potential purchasers of property in Imperial County, and attached to all building permits issued for projects within 0.25 mile of agricultural land. The Imperial County Right-to-Farm notice states that individuals who purchase or own land near agricultural lands or operations may be subject to inconvenience or discomfort arising from such operations. These may include, but are not limited to, noise, odors, light, fumes, dust, smoke, insects, chemicals, storage and disposal of manure, and the application by spraying or otherwise of chemical fertilizers, soil amendments, herbicides, and pesticides. One or more of these inconveniences may occur within existing laws and regulations and adjacent landowners shall be prepared to accept such inconveniences as a normal and necessary aspect of living in a county with a strong rural character and an active agricultural sector (County of Imperial 2015).

6 LAND EVALUATION AND SITE ASSESSMENT

The LESA Model consists of two parts: the Land Evaluation Section and Factors and the Site Assessment Factors. Scoring is included in the tables below, and each section's process and findings are described in detail below.

6.1 Part One: Scoring of Land Evaluation Factors

The California LESA Model includes two Land Evaluation factors that are rated separately:

1. **The Land Capability Classification Rating.** The U.S. Department of Agriculture (USDA) Land Capability Classification (LCC) indicates the suitability of soils for common crop types. Groupings are made according to the limitations of the soils when used to grow crops, and the risk of damage to soils when they are used in agriculture. Soils are rated from Class I to VIII, with soils having the fewest limitations receiving the highest rating (Class I). Specific subclasses are also used to further characterize soils (DOC 1997).
2. **The Storie Index Rating.** The Storie Index provides a numeric rating based on a 100-point scale of the relative degree of suitability or value of a given soil for intensive agriculture. The rating is based on soil characteristics only. Four factors that represent the inherent characteristics and qualities of the soil are considered in the index rating, including profile characteristics, texture of the surface layer, slope, and other factors such as drainage and salinity (DOC 1997).

A total of 12 soil units and one water unit are present within the Project site (Figure 3). Pursuant to the LESA Instruction Manual (DOC 1997), the table below summarizes the LCC and Storie Index rating of each soil unit in proportion to the Project area; these ratings were used to calculate the Project's LCC Total Score and Storie Index Total Score (see Table 1; equivalent to Table 1A of the Instruction Manual). The application of the Land Evaluation model results in an LCC score of 52.24 and a Storie Index Score of 33.45.

Table 1. Land Capability Classification and Storie Index Scores

Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score
103	7.1	0.012	IVs-4	40	0.48	26	0.312
107	1.2	0.002	IIIs-6	60	0.12	52	0.104
122	24.7	0.041	IIIw-3	60	2.46	43	1.763
123	3.5	0.006	IIIw-3	60	0.36	43	0.258
125	11.7	0.019	IVw-3	40	0.76	13	0.247
129	67.4	0.111	VIIIe	0	0	10	1.11
130	4	0.007	IVs-4	40	0.28	57	0.399
133	2.5	0.004	IIIs-4	60	0.24	56	0.224
135	446.9	0.738	IIIw-4	60	44.28	36	26.568
139	0.7	0.001	IIIs-4	60	0.06	85	0.085
141	2.9	0.005	VIIIe	0	0	20	0.1
142	24.2	0.04	IIw-4	80	3.2	57	2.28
145	9.1	0.014	N/A	-	-	N/A	-
Totals	605.9	1		**LCC Total Score**	52.24	**Storie Index Total Score**	33.45

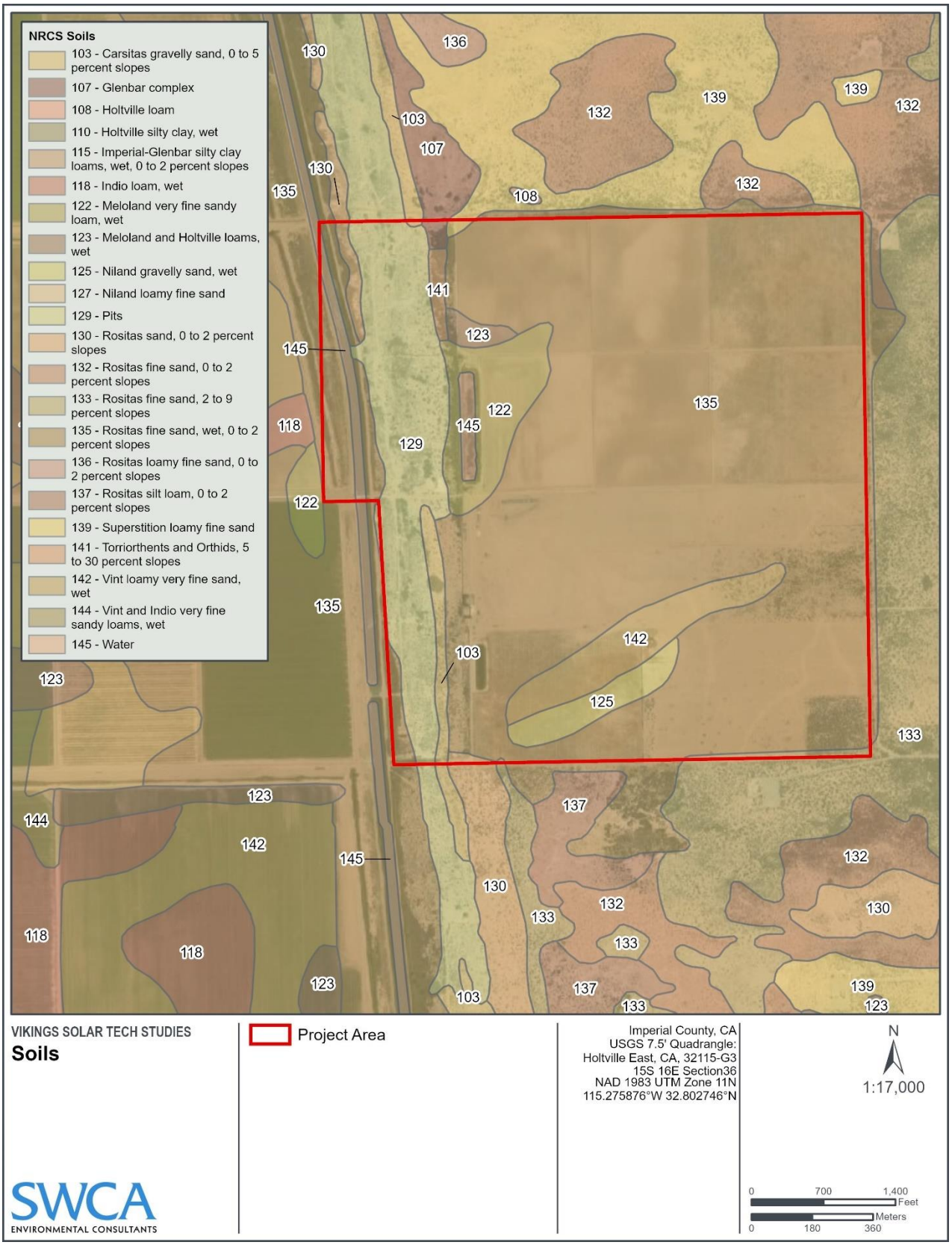

Figure 3. Soils map.

6.2 Part Two: Scoring of Site Assessment Factors

The California LESA Model includes four Site Assessment factors that are separately rated:

1. The Project Size Rating;
2. The Water Resources Availability Rating;
3. The Surrounding Agricultural Land Use Rating; and
4. The Surrounding Protected Resource Land Rating.

6.2.1 *Project Size Rating*

The Project Size Rating consists of the total acreage of the Project site and the acreage of different quality lands that comprise the Project site. Under the Project Size Rating, relatively fewer acres of high-quality soils are required to achieve a maximum Project Size score. Alternatively, a maximum score on lesser quality soils could also be derived, provided there is a sufficiently large acreage present. Based on the LESA Instruction Manual (DOC 1997) project sizing scoring rubric (Table 2), the Project will result in a score of 100 because the acreage of land within the Project site includes more than 160 acres of LCC Class III soils (see Table 3; equivalent to Table 1B in the Instruction Manual).

Table 2. Project Size Scoring Rubric

LCC Class I or II Soils		LCC Class III Soils		LCC Class IV or lower	
Acres	**Score**	**Acres**	**Score**	**Acres**	**Score**
80+	100	160+	100	320+	100
60-79	90	120-159	90	240-319	80
40-59	80	80-119	80	160-239	60
20-39	50	60-79	60	100-159	40
10-19	30	40-59	30	40-99	20
<10	0	20-39	10	<40	0
		<10	0		

Source: DOC 1997

Table 3. Project Size Rating Acreages

Map Soil Unit	LCC	LCC Class I–II	LCC Class III	LCC Class IV–VIII
103	IVs-4			7.1
107	IIIs-6		1.2	
122	IIIw-3		24.7	
123	IIIw-3		3.5	
125	IVw-3			11.7
129	VIIIe			67.4
130	IVs-4			4
133	IIIs-4		2.5	
135	IIIw-4		446.9	
139	IIIs-4		0.7	

Map Soil Unit	LCC	LCC Class I–II	LCC Class III	LCC Class IV–VIII
141	VIIIe			2.9
142	IIw-4	24.2		
145	N/A	-	-	-
	Total	**24.2**	**479.5**	**93.1**

6.2.2 *Water Resources Availability Rating*

The Water Resources Availability Rating is based on identifying the various water resources that may supply a given property and determining whether different restrictions to those resources are likely to take place in periods of drought and non-drought. For each water resource available to the Project site, an analysis is conducted to determine whether irrigated and dryland agriculture is feasible and if any physical or economic restrictions exist, both during drought and non-drought years. Based on the LESA Instruction Manual, definitions of the terms physical restriction, economic restriction, and feasible are provided below:

- A *physical restriction* is an occasional or regular interruption or reduction in a water supply, or shortened irrigation season, that forces a change in agricultural practices, such as planting a crop that uses less water or leaving land fallow. This could be in the form of cutbacks in supply by irrigation and water districts, or by ground or surface water becoming depleted or unusable. Poor water quality can also result in a physical restriction, i.e., by requiring the planting of salt-tolerant plants, or by effectively reducing the amount of available water.
- An *economic restriction* is a rise in the cost of water to a level that forces a reduction in consumption. This could be from surcharge increases from water suppliers as they pass along the cost of finding new water supplies, the extra cost of pumping more ground water to make up for losses in surface water supplies, or the extra energy costs of pumping the same amount of ground water from deeper within an aquifer.
- Irrigated agricultural production is *feasible* when:
    1. There is an existing irrigation system on the project site that can serve the portion of the project identified in Step 2;
    2. Physical and/or economic restrictions are not severe enough to halt production; and
    3. It is possible to achieve a viable economic return on crops through irrigated production.

  Dryland production is *feasible* when rainfall is adequate to allow an economically viable return on a non-irrigated crop.

Based on a review of information provided in the Agricultural Element, it was assumed that the only viable water source in the Project area is water supplied by the IID. The IID depends solely on the Colorado River for surface water supply, as rainfall in this area is less than 3 inches per year and groundwater in the Imperial Valley is of poor quality and is generally unsuitable for domestic or irrigation purposes (IID 2020a). Persistent drought has affected the Colorado River watershed and as a result, a concerted effort by affected contractors in the upper and lower basins has been developed, known as the Drought Contingency Plan, to arrest the declining elevation in water levels observed at lakes within the watershed (IID 2020b). In addition to water supply concerns during drought years, the Agricultural Element describes increasing salinity of the Salton Sea as a key concern for irrigated agricultural uses within the county (County of Imperial 2015). Both of these issues would be considered physical restrictions. Since salinity would be a physical restriction that is not necessarily caused by drought, this was considered as a restriction present during non-drought years.

Based on the LESA Instruction Manual and information regarding irrigation water supply availability provided by the County and the IID, the Project resulted in a Water Resources Availability Score of 75 (Table 4).

Table 4. Water Resources Availability Score

Project Proportion	Water Source	Proportion of Project Area	Water Availability Score	Weighted Availability Score
1	Irrigation District Water	1.0	75	75
			Total Water Resources Score	**75**

6.2.3 *Surrounding Agricultural Land Use Rating*

The Surrounding Agricultural Land Use Rating is based on the identification of a project's Zone of Influence (ZOI), which is defined as land within any parcels that are within 0.25 mile of the boundaries of the smallest rectangle that encloses the whole of the project property. The boundary of the Project ZOI is illustrated on Figure 4. Based on the California FMMP, the ZOI consists of approximately 42.98 acres of land designated as Urban and Built-Up Land, 1.42 acres of land designated as Farmland of Local Importance, 424.91 acres of land designated as Prime Farmland, 195.59 acres of land designated as Farmland of Statewide Importance, and 3,127.27 acres of Other land (DOC 2016). Aerial imagery was also evaluated to ensure accuracy of which surrounding land appeared to have been used for agricultural uses. Therefore, the percentage of land within the ZOI that consisted of agricultural uses was calculated by combining the acreages of Farmland of Local Importance, Prime Farmland, and Farmland of Statewide Importance and dividing by the total acreage of the ZOI. Approximately 16.4% of the ZOI consists of land in agricultural uses, and this resulted in a score of 0 on the DOC's LESA Model Instruction Manual rating scale as it was less than 40% (Table 5).

Table 5. Surrounding Agricultural Land and Surrounding Protected Resource Land Scores

Zone of Influence						
Total Acres	Acres in Agriculture	Acres of Protected Resource Land	Precent in Agriculture	Percent Protected Resource Land	Surrounding Agricultural Land Score	Surrounding Protected Resource Land Score
3,792.17	621.92	0	16.4	0	0	0

6.2.4 *Surrounding Protected Resource Land Rating*

The Surrounding Protected Resource Land Rating functions as an extension of the Surrounding Agricultural Land Use Rating and is similarly scored. Protected resource lands are defined as lands that are subject to long-term restrictions that are compatible with or supportive of agricultural uses of land, including, but not limited to, Williamson Act contracted lands; publicly owned lands maintained as park, forest, or watershed resources; and lands with agricultural, wildlife habitat, open space, or natural resource easements that restrict the conversion of such land to urban or industrial uses (DOC 1997). On February 23, 2010, the County Board of Supervisors approved Minute Order #10a forcing all existing Williamson Act contracts within the county into non-renewal, and the County is not currently entering into new contracts (AgAlert 2010).

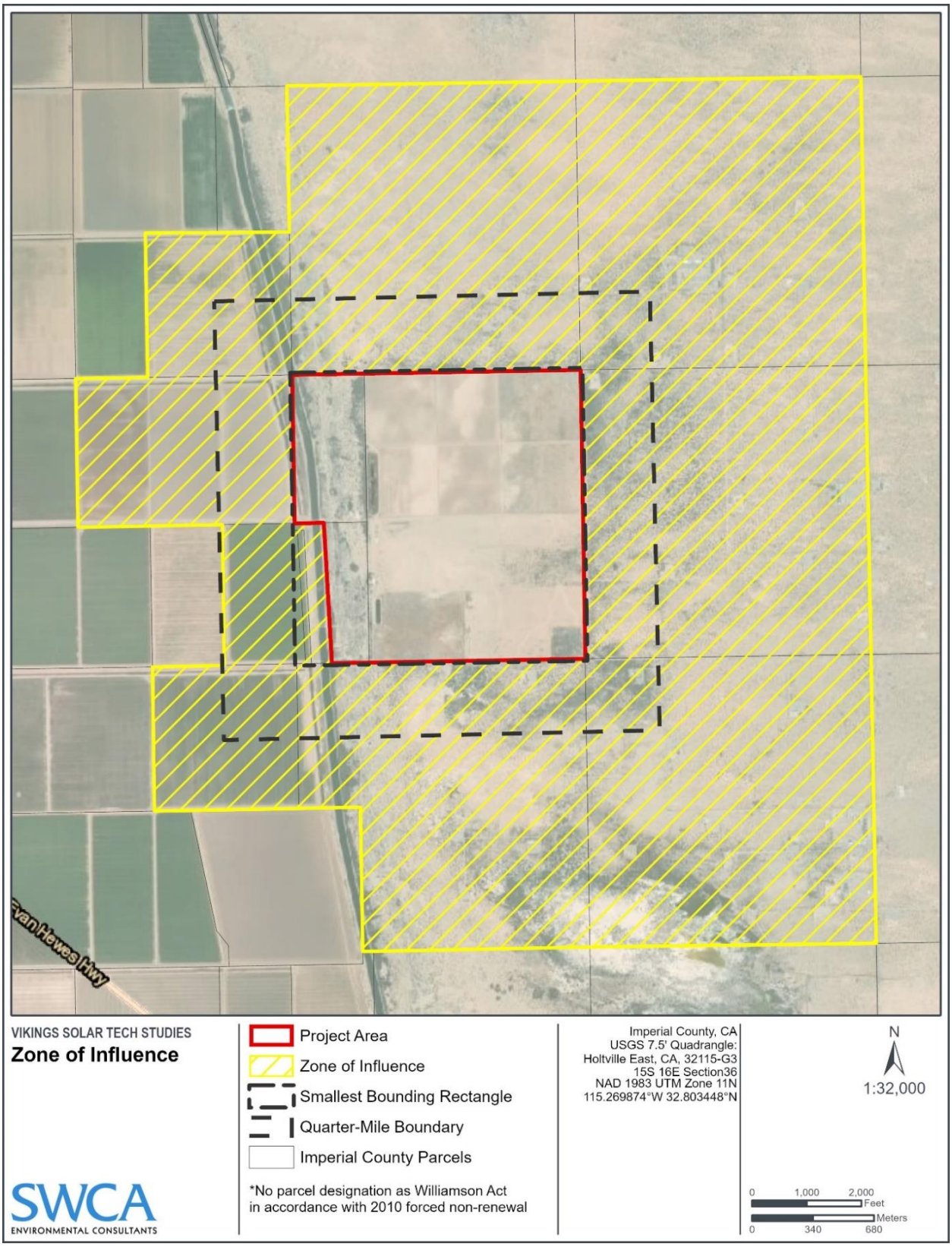

Figure 4. Zone of Influence map.

The last of the active contracts within the county are due to expire on January 1, 2021; therefore, for the purposes of this assessment, it is assumed that no active Williamson Act contracts would be located within the project ZOI (County of Imperial 2012; refer to Appendix A: Figure A-1). Proximate publicly owned lands include the U.S. Bureau of Land Management (BLM) Imperial Sand Dunes Recreational Area (i.e., Algodones Dunes), located approximately 12 miles to the east; BLM Hot Springs, located approximately 2 miles south of the Project site (BLM 2020); and several wildlife areas and wildlife refuges located approximately 22 miles to the northwest of the Project site (California Department of Fish and Wildlife 2015). There are no publicly owned lands or other existing easements within the Project ZOI; therefore, for the purposes of this assessment, there is no protected resource land within the ZOI. The Project resulted in a corresponding Surrounding Protected Resource Land score of 0, based on the LESA Instruction Manual rating scale, as protected resource land represents less than 40% of the ZOI (see Table 5).

7 CONCLUSION

Upon completion of each of the Land Evaluation factors and Site Assessment factors scores, each factor is weighted based on the standard weights assigned in the LESA Instruction Manual and added together for a final score based on a 100-point scale. Table 6 corresponds to Table 8, Final LESA Score Sheet, in the LESA Instruction Manual, and Table 7 presents the California Agricultural LESA Model scoring thresholds. Based on these thresholds, the Project site represents a significant agricultural resource because each of the Land Evaluation factors and Site Assessment factors scores are greater than or equal to 20 points (DOC 1997).

Table 6. Final LESA Score Sheet

	Factor Scores	Factor Weight	Weighted Factor Scores
Land Evaluation Factors			
Land Capability Classification	52.24	0.25	13.06
Storie Index	33.45	0.25	8.3625
Land Evaluation Subtotal		*0.50*	*21.4225*
Site Assessment Factors			
Project Size	100	0.15	15
Water Resource Availability	75	0.15	11.25
Surrounding Agricultural Land	0	0.15	0
Protected Resource Land	0	0.05	0
Site Assessment Subtotal		*0.50*	*26.25*
		Final LESA Score	**47.6725**

Table 7. California LESA Model Scoring Thresholds

Total LESA Score	Scoring Decision
0–39 points	Not Considered Significant
40–59 points	Considered Significant only if Land Evaluation and Site Assessment sub-scores are each greater than or equal to 20 points
60–79 points	Considered Significant unless either Land Evaluation or Site Assessment sub-score is less than 20 points
80–100 points	Considered Significant

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APPENDIX A

County of Imperial Williamson Act Year of Termination Map

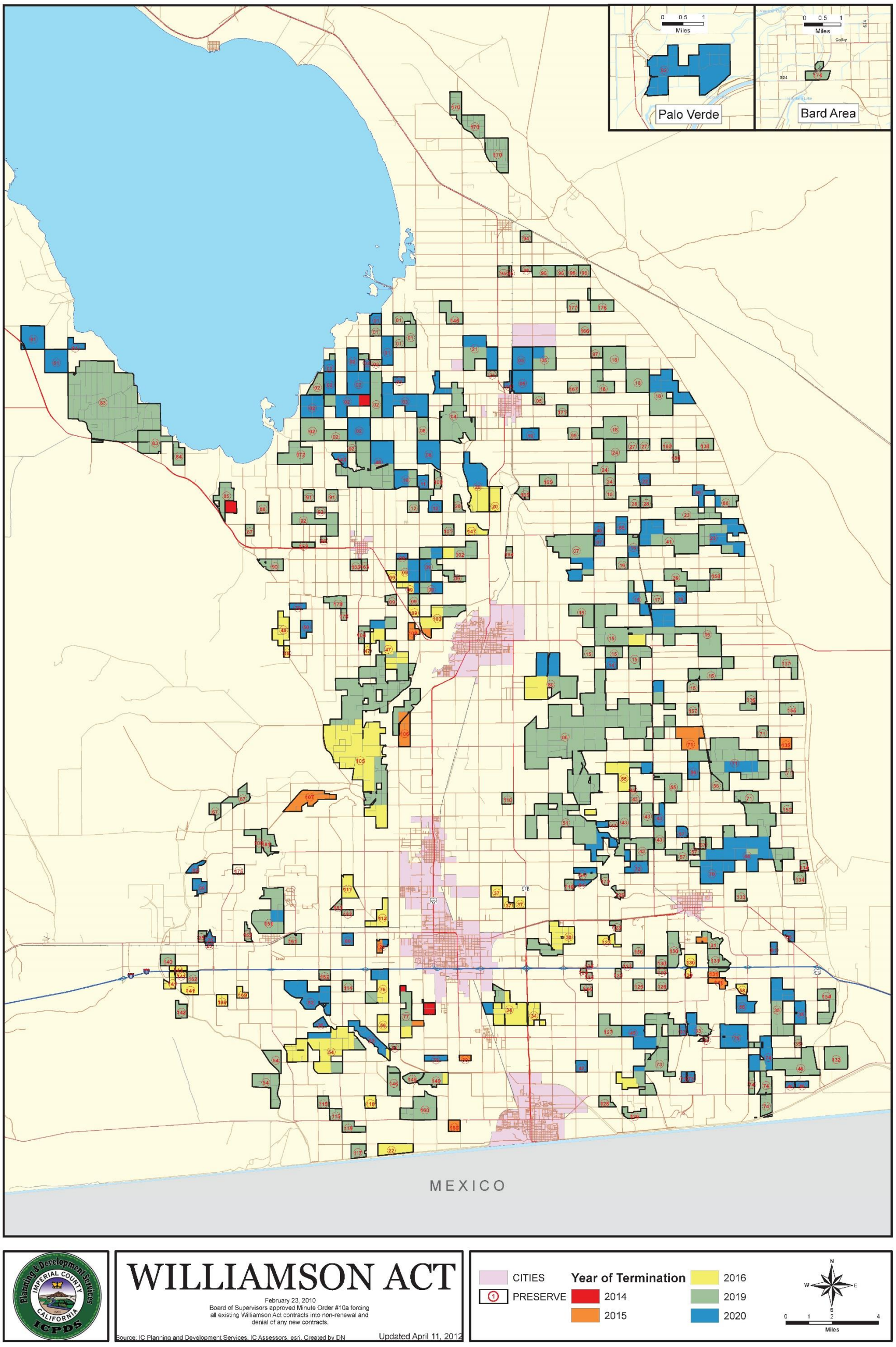

Figure A-1. County of Imperial Williamson Act Year of Termination Map

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Geotechnical Report

Viking Solar Facility
Nelson Pit Road
Holtville, California

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January 13, 2021

Ms. Jamie Nagel
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Geotechnical Report
Viking Solar Facility
Nelson Pit Road
Holtville, California
LCI Report No. LE20189

Dear Ms. Nagel:

This geotechnical report is provided for design and construction of the proposed development of a 100 MW PV solar power generation facility at the approximately 600-acre project site located at the east end of Nelson Pit Road east of the Highline Canal approximately six miles east to southeast of Holtville, California. The Viking Solar Facility will include a substation and battery storage containers. Our geotechnical exploration was conducted in response to your request for our services. The enclosed report describes our soil engineering site evaluation and presents our professional opinions regarding geotechnical conditions at the site to be considered in the design and construction of the project.

Based on the geotechnical conditions encountered at the points of exploration, the project site appears suitable for the proposed construction provided the professional opinions contained in this report are considered in the design and construction of this project.

We appreciate the opportunity to provide our findings and professional opinions regarding geotechnical conditions at the site. Please provide our office with a set of the foundation plans and civil plans for review to insure that the geotechnical site constraints have been included in the design documents. If you have any questions or comments regarding our findings, please call our office at (760) 370-3000.

Respectfully Submitted,
Landmark Consultants, Inc.

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EXECUTIVE SUMMARY

This executive summary presents ***selected*** elements of our findings and professional opinions. This summary ***may not*** present all details needed for the proper application of our findings and professional opinions. Our findings, professional opinions, and application options are ***best related through reading the full report***, and are best evaluated with the active participation of the engineer of record who developed them. The findings of this study are summarized below:

- The project site consists predominantly of medium dense to very dense sands (SP) and silty sands (SM) with minor interbedded clay layers encountered sporadically throughout the project site.

- Special foundation designs to mitigate expansive soil conditions are not required.

- The foundations may be designed using an allowable soil bearing pressure of 2,000 psf with standard increases allowed by the California Building Code when foundations are supported on imported or native compacted sands (extending a minimum of 1.0 feet below footings).

- The risk of liquefaction induced settlement is low at the electrical substation area (CPT-11). Liquefaction may occur in isolated silt and sand layers encountered at depths of 15 to 42 feet below ground surface. Potential liquefaction induced settlements of ½ inch have been estimated for the substation area. There is a very low risk of ground rupture and/or sand boil formation should liquefaction occur.

- Low sulfate and moderate chloride levels were encountered in the soil samples tested for this study. However, in consideration of general corrosive environment in the vicinity, it is recommended that concrete should use Type V cement with a maximum water-cement ratio of 0.50 and a minimum compressive strength of 4,000 psi.

- All reinforcing bars, anchor bolts and hold down bolts shall have a minimum concrete cover of 3.0 inches unless epoxy coated (ASTM D3963/A934).

- All-weather accessways should consist of a minimum of 6 inches of Caltrans Class 2 aggregate base material placed over 12 inches of compacted native sand (95%).

Section 1
INTRODUCTION

1.1 Project Description

This report presents the findings of our geotechnical exploration for the proposed development of a 100 MW PV solar power generation facility at the approximately 600-acre site located at the east end of Nelson Pit Road east of the East Highline Canal approximately six miles east to southeast of Holtville, California (See Vicinity Map, Plate A-1). The solar power generation facility will consist of installing PV solar panels mounted on steel racks supported by short piers, shallow driven posts or shallow spread footings. The proposed solar energy facility will have an electrical substation with step-up transformers and dead-end A-frames for overhead power line connections and battery storage containers near the middle of the west boundary of the site. The photovoltaic modules are planned to be ground mounted on single-axis tracker frames or fixed-tilt frames. A proposed site layout was provided by the client.

Footing loads at exterior bearing walls are estimated at 1 to 5 kips per lineal foot. Column loads are estimated to range from 5 to 30 kips. Site development will include minimal site grading for the PV panel areas, building pad preparation for the battery containers, underground utility installation, site paving and all weather road surfacing.

1.2 Purpose and Scope of Work

The purpose of this geotechnical study was to investigate the upper 50 feet of subsurface soil at selected locations within the site for evaluation of physical/engineering properties, liquefaction potential during seismic events, field testing for steel post capacities and soil electrical/thermal resistivity parameters. Professional opinions were developed from field and laboratory test data and are provided in this report regarding geotechnical conditions at this site and the effect on design and construction. The scope of our services consisted of the following:

- Field exploration and in-situ testing of the site soils at selected locations and depths.
- Laboratory testing for physical and/or chemical properties of selected samples.
- Review of the available literature and publications pertaining to local geology, faulting, and seismicity.
- Engineering analysis and evaluation of the data collected.
- Preparation of this report presenting our findings and professional opinions regarding the geotechnical aspects of project design and construction.

This report addresses the following geotechnical parameters:

- Subsurface soil and groundwater conditions
- Site geology, regional faulting and seismicity, near source factors, and site seismic accelerations
- Liquefaction potential and its mitigation
- Existence of expansive soils
- Aggressive soil conditions to metals and concrete

Professional opinions with regard to the above parameters are provided for the following:

- Site grading and earthwork
- Building pad and foundation subgrade preparation
- Allowable soil bearing pressures and expected settlements
- Capacities for drilled piers and/or driven steel posts
- Soil parameters for L-Pile program determined by steel post load tests
- Concrete slabs-on-grade
- Excavation conditions and buried utility installations
- Mitigation of the potential effects of salt concentrations in native soil to concrete mixes and steel reinforcement
- Seismic design parameters
- Structural section for unpaved roadways and construction laydown areas

Our scope of work for this report did not include an evaluation of the site for the presence of environmentally hazardous materials or conditions, groundwater mounding, soil infiltration rates (storm water basins), soil percolation rates (septic systems), or landscape suitability of the soil.

1.3 Authorization

Ziad Alaynan, PE of APEX Energy Solutions, LLC provided authorization by written agreement to proceed with our work on November 9, 2020. We conducted our work according to our written proposal dated November 3, 2020.

Section 2
METHODS OF INVESTIGATION

2.1 Field Exploration

Subsurface exploration was performed on November 23, 2020 using 2R Drilling of Ontario, California to advance three (3) borings to depths of 16.5 to 21.5 feet below existing ground surface. The borings were advanced with a truck-mounted, CME 75 drill rig using 8-inch diameter, hollow-stem, continuous-flight augers. The approximate boring locations were established in the field and plotted on the site map by sighting to discernible site features. The boring locations are shown on the Site and Exploration Plan (Plate A-2).

A professional engineer observed the drilling operations and maintained logs of the soil encountered with sampling depths. Soils were visually classified during drilling according to the Unified Soil Classification System and relatively undisturbed and bulk samples of the subsurface materials were obtained at selected intervals. The relatively undisturbed soil samples were retrieved using a 2-inch outside diameter (OD) split-spoon sampler or a 3-inch OD Modified California Split-Barrel (ring) sampler. In addition, Standard Penetration Tests (SPT) were performed in accordance with ASTM D1586. The samples were obtained by driving the samplers ahead of the auger tip at selected depths using a 140-pound CME automatic hammer with a 30-inch drop. The number of blows required to drive the samplers the last 12 inches of an 18-inch drive depth into the soil is recorded on the boring logs as "blows per foot". Blow counts (N values) reported on the boring logs represent the field blow counts. No corrections have been applied to the blow counts shown on the boring logs for effects of overburden pressure, automatic hammer drive energy, drill rod lengths, liners, and sampler diameter.

After logging and sampling the soil, the exploratory borings were backfilled with the excavated material. The backfill was loosely placed and was not compacted to the requirements specified for engineered fill.

Additional subsurface exploration was also performed on November 24 and 25, 2020 using Middle Earth Geo Testing, Inc. of Orange, California to advance eleven (11) electric cone penetrometer (CPT) soundings to approximate depths of 20 to 50 feet below existing ground surface. The soundings were made at the locations shown on the Site and Exploration Plan (Plate A-2). The approximate sounding locations were established in the field and plotted on the site map by sighting to discernible site features.

CPT soundings provide a continuous profile of the soil stratigraphy with readings every 2.5cm (1 inch) in depth. Direct sampling for visual and physical confirmation of soil properties has been used by our firm to establish direct correlations with CPT exploration in this geographical region.

The CPT exploration was conducted by hydraulically advancing an instrumented Hogentogler $15cm^2$ conical probe into the ground at a rate of 2cm per second using a 25-ton truck as a reaction mass. An electronic data acquisition system recorded a nearly continuous log of the resistance of the soil against the cone tip (Qc) and soil friction against the cone sleeve (Fs) as the probe was advanced. Empirical relationships (Robertson and Campanella, 1989) were then applied to the data to give a continuous profile of the soil stratigraphy. Interpretation of CPT data provides correlations for SPT blow count, phi (ϕ) angle (soil friction angle), undrained shear strength (S_u) of clays and over-consolidation ratio (OCR). These correlations may then be used to evaluate vertical and lateral soil bearing capacities and consolidation characteristics of the subsurface soil.

Interpretive logs of the CPT soundings and subsurface logs are presented on Plates B-1 through B-14 in Appendix B. A key to the interpretation of CPT soundings and log symbols are presented on Plates B-15 and 16. The stratification lines shown on the subsurface logs represent the approximate boundaries between the various strata. However, the transition from one stratum to another may be gradual over some range of depth.

2.2 Field Electrical Resistivity Testing

Wenner 4-pin field resistivity testing was conducted by RF Yeager Engineering of Lakeside, California under sub-contract to Landmark at three (3) locations within the proposed solar array site in accordance with ASTM G57 standards. Tests were conducted with both North-South and East-West pin orientations. The tests were conducted at pin spacings of 2.5, 5, 10, 15 and 20 feet. Additionally, near surface soil samples (upper 5 feet) ware obtained for laboratory soil corrosivity testing at the select location. The results of the electrical resistivity and soil corrosivity testing are presented in Appendix E.

2.3 Thermal Resistivity Testing

Laboratory soil thermal resistivity testing was conducted by RF Yeager Engineering at three (3) locations within the project site. The tests were conducted at the locations shown on Figure 1 in Appendix E. The testing was conducted in accordance with ASTM D5334. Near surface soil samples were obtained from Borings B-1, B-2, and B-3 as shown on Figure 1 in Appendix E.

The thermal resistivity testing consisted of determining a thermal dry-out curve at each test location. The results of the thermal resistivity testing are presented in Appendix E.

2.4 Laboratory Testing

Laboratory tests were conducted on selected bulk (auger cuttings) and relatively undisturbed soil samples obtained from the soil borings to aid in classification and evaluation of selected engineering properties of the site soils. The tests were conducted in general conformance to the procedures of the American Society for Testing and Materials (ASTM) or other standardized methods as referenced below. The laboratory testing program consisted of the following tests:

- Particle Size Analyses (ASTM D422) – used for soil classification
- Chemical Analyses (soluble sulfates & chlorides, pH, and resistivity) (Caltrans Method)

The laboratory test results are presented on the subsurface logs (Appendix B) and in Appendix C and E. Engineering parameters of soil strength, compressibility and relative density utilized for developing design criteria provided within this report were either extrapolated from correlations with the subsurface CPT data or from data obtained from the field laboratory testing program.

Section 3
DISCUSSION

3.1 Site Conditions

The approximately 600-acre project site located at the east end of Nelson Pit Road east of the East Highline Canal approximately 6 miles east to southeast of Holtville, California. The project consists of three (3) parcels (APN 050-070-019, 050-070-021, 050-070-018). The project site is currently a combination of a fallow agricultural field, active agricultural fields and vacant desert land.

The two western parcels are currently vacant with overgrown brush and multiple piles of debris. These two parcels parallel the East Highline Canal and are channel shaped in the north-south direction. The larger agricultural parcel that makes up approximately 480 acres is fallowed south of Nelson Pit Road and in agricultural production north of the road. A residential farm house and shop are located along the southwest end of this parcel. Two fresh water ponds are located along the western boundary of this parcel. Water is supplied by a private ditch that pumps water from canal that comes off of the East Highline Canal. The north portion of this parcel is sprinkler irrigated with signs of old underground piping with standpipes. The southern fallowed portion of the eastern parcel has underground transit water pipelines.

The project site lies at an elevation of approximately 25 to 45 feet above mean sea level (MSL) (El. 1025 to 1045 local datum) in the northwestern region of the Imperial Valley in the California low desert. The surrounding properties lie on terrain which is flat (planar), part of a large agricultural valley, which was previously an ancient lake bed covered with fresh water (about 300 years ago) to an elevation of 43± feet above MSL. Annual rainfall in this arid region is less than 3 inches per year with four months of average summertime temperatures above 100 ºF. Winter temperatures are mild, seldom reaching freezing.

3.2 Geologic Setting

The project site is located in the East Mesa portion of the Salton Trough physiographic province. The Salton Trough is a topographic and geologic structural depression resulting from large scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments deposited since the Miocene Epoch (Morton, 1977). Tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of seismicity. Figure 1 shows the location of the site in relation to regional faults and physiographic features.

The East Mesa lies east of the Imperial Valley, which is underlain by lacustrine deposits consisting of interbedded lenticular and tabular silt, sand, and clay, and west of the Algodones Sand Dunes. The East Mesa is underlain by deep sand deposits derived from eolian deposition along the eastern margin of the Imperial Valley.

The Late Pleistocene to Holocene lake deposits of the Imperial Valley are probably less than 100 feet thick and derived from periodic flooding of the Colorado River which intermittently formed Lake Cahuilla. Older deposits consist of Miocene to Pleistocene non-marine and marine sediments deposited during intrusions of the Gulf of California. Basement rock consisting of Mesozoic granite and Paleozoic metamorphic rocks are estimated to exist at depths between 15,000 - 20,000 feet

3.3 Subsurface Soil

The UC Davis California Soil Resource Lab “SoilWeb Earth” computer application (UC Davis, 2020) for Google Earth indicates that surficial deposits at the project site consist predominantly of silty sand loams of the Rositas, Vint, Niland, Carsitas and Meloland (see Plate A-3). These loams and sands are formed in sediment and alluvium of mixed origin (Colorado River overflows, Mountain run-off and fresh-water lake-bed sediments).

Subsurface soils encountered during the field exploration of the proposed solar array areas conducted on November 23 thru 25, 2020 consist of predominantly medium dense to very dense sand and silty sands to a depth of 20 feet below ground surface. Thin (2 to 5 feet thick) clay layers were encountered sporadically throughout the project site below depths of 6 feet. The subsurface soils at the proposed electrical substation area located near the middle of the western boundary of the project site are predominately dense to very dense sands and gravely sands to a depth 50 feet below ground surface, the maximum depth of exploration. The subsurface logs (Plates B-1 through B-14) depict the stratigraphic relationships of the various soil types.

3.4 Groundwater

Groundwater was encountered in Boring B-3, proposed electrical substation area, (Plate B-14) at about 9.0 feet at the time of exploration. Groundwater was encountered between 18 and 20 feet in Boring B-2 and B-1 respectively. Groundwater is likely to be present at the interface between surface sands and underlying clays.

There is uncertainty in the accuracy of short-term water level measurements, particularly in fine-grained soil. The referenced groundwater levels should not be interpreted to represent permanent condition. Groundwater levels may fluctuate with precipitation, EHL Canal water stage, site watering, drainage, and site grading.

3.5 Faulting

The project site is located in the seismically active Imperial Valley of southern California with numerous mapped faults traversing the region including the San Andreas, San Jacinto, and Elsinore Fault Zones in southern California. The Imperial fault represents a transition from the more continuous San Andreas fault to a more nearly echelon pattern characteristic of the faults under the Gulf of California (USGS, 1990). We have performed a computer-aided search of known faults or seismic zones that lie within a 62 mile (100 kilometer) radius of the project site (Table 1).

A fault map illustrating known active faults relative to the site is presented on Figure 1, *Regional Fault Map*. Figure 2 shows the project site in relation to local faults. The criterion for fault classification adopted by the California Geological Survey defines Earthquake Fault Zones along Holocene-active or pre-Holocene faults (CGS, 2019b). Earthquake Fault Zones are regulatory zones that address the hazard of surface fault rupture. A Holocene-active fault is one that has ruptured during Holocene time (within the last 11,700 years). A pre-Holocene fault is a fault that has not ruptured in the last 11,700 years. Pre-Holocene faults may still be capable of surface rupture in the future, but are not regulated by the A-P act.

Review of the current Earthquake Fault Zone maps (CGS, 2019a) indicates that the nearest zoned fault is the Rico fault located approximately 7.1 miles west of the project site and the Imperial fault located approximately 7.9 miles west to southwest of the project site.

3.6 General Ground Motion Analysis

The project site is considered likely to be subjected to moderate to strong ground motion from earthquakes in the region. Ground motions are dependent primarily on the earthquake magnitude and distance to the seismogenic (rupture) zone. Acceleration magnitudes also are dependent upon attenuation by rock and soil deposits, direction of rupture and type of fault; therefore, ground motions may vary considerably in the same general area.

2019 CBC General Ground Motion Parameters: The California Building Code (CBC) requires that a site-specific ground motion hazard analysis be performed in accordance with ASCE 7-16 Section 11.4.8 for structures on Site Class D and E sites with S_1 greater than or equal to 0.2 and Site Class E sites with S_s greater than or equal to 1.0. **This project site has been classified as Site Class D and has a S_1 value of 0.6, which would require a site-specific ground motion hazard analysis**. However, ASCE 7-16 Section 11.4.8 provides three exceptions which permit the use of conservative values of design parameters for certain conditions for Site Class D and E sites in lieu of a site specific hazard analysis.

The exceptions are:

- Exception 1: Structures on Site Class E sites with S_s greater than or equal to 1.0, provided the site coefficient F_a is taken as equal to that of Site Class C.
- Exception 2: Structures on Site Class D sites with S_1 greater than or equal to 0.2, provided the value of the seismic response coefficient C_s is determined by Equations 12.8-2 for values of $T \leq 1.5T_S$ and taken as equal to 1.5 times the value computed in accordance with either Equation 12.8-3 for $T_L \geq T > 1.5T_S$ or Equation 12.8-4 for $T > T_L$.
- Exception 3: Structures on Site Class E sites with S_1 greater than or equal to 0.2, provided that T is less than or equal to T_S and the equivalent static force procedure is used for design.

The project design engineer should confirm that an exception applies to the project. If none of the exceptions apply, our office should be consulted to perform a site-specific ground motion hazard analysis.

The 2019 CBC general ground motion parameters are based on the Risk-Targeted Maximum Considered Earthquake (MCE_R). The Structural Engineers Association of California (SEAOC) and Office of Statewide Health Planning and Development (OSHPD) Seismic Design Maps Web Application (SEAOC, 2020) was used to obtain the site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters. Design spectral response acceleration parameters are defined as the earthquake ground motions that are two-thirds (2/3) of the corresponding MCE_R ground motions. The Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration adjusted for soil site class effects (PGA_M) value to be used for liquefaction and seismic settlement analysis in accordance with 2019 CBC Section 1803.5.12 ($PGA_M = F_{PGA}$*PGA) is estimated at 0.55g for the project site. **Design earthquake ground motion parameters are provided in Table 2.**

3.7 Seismic and Other Hazards

- **Groundshaking.** The primary seismic hazard at the project site is the potential for strong groundshaking during earthquakes along the Rico, Imperial and Brawley Faults.
- **Surface Rupture.** The California Geological Survey (2016) has established Earthquake Fault Zones in accordance with the 1972 Alquist-Priolo Earthquake Fault Zone Act. The Earthquake Fault Zones consists of boundary zones surrounding well defined, active faults or fault segments. The project site does not lie within an A-P Earthquake Fault Zone; therefore, surface fault rupture is considered to be low at the project site. However, because of the high tectonic activity and deep alluvium of the region, we cannot preclude the potential for surface rupture on undiscovered or new faults that may underlie the site.
- **Liquefaction.** Liquefaction is a potential design consideration because of underlying saturated sandy substrata. Although the Imperial Valley has not yet been evaluated for seismic hazards by the California Geological Survey seismic hazards zonation program, liquefaction is well documented in the Imperial Valley after strong seismic events (McCrink, et al, 2011 and Rymer et al, 2011). The potential for liquefaction at the site is discussed in more detail in Section 3.8. Liquefaction induced lateral spreading is not expected to occur at this site due to the planar topography.

Other Potential Geologic Hazards.

- **Landsliding.** The hazard of landsliding is unlikely due to the regional planar topography. No ancient landslides are shown on geologic maps of the region and no indications of landslides were observed during our site investigation.
- **Volcanic hazards.** The site is not located in proximity to any known volcanically active area and the risk of volcanic hazards is considered very low.
- **Tsunamis and seiches.** The site is not located near any large bodies of water, so the threat of tsunami, seiches, or other seismically-induced flooding is unlikely.
- **Flooding.** The project site is located in FEMA Flood Zone X, an area determined to be outside the 0.2% annual chance floodplain (FIRM Panels 06025C1775). The project site is also along the East Highline Canal which has potential to overflow into the channelized parcels along the east canal bank.
- **Expansive soil.** The near surface soils in the project site are sands which are considered non-expansive.

3.8 Liquefaction

Liquefaction occurs when granular soil below the water table is subjected to vibratory motions, such as produced by earthquakes. With strong ground shaking, an increase in pore water pressure develops as the soil tends to reduce in volume. If the increase in pore water pressure is sufficient to reduce the vertical effective stress (suspending the soil particles in water), the soil strength decreases and the soil behaves as a liquid (similar to quicksand). Liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow bearing foundations.

Four conditions are generally required for liquefaction to occur:

(1) the soil must be saturated (relatively shallow groundwater);
(2) the soil must be loosely packed (low to medium relative density);
(3) the soil must be relatively cohesionless (not clayey); and
(4) groundshaking of sufficient intensity must occur to function as a trigger mechanism.

All of these conditions exist to some degree at this site.

Methods of Analysis: The computer program CLiq (Version 2.2.0.32, Geologismiki, 2017) was utilized for liquefaction assessment at the project site. The estimated settlements have been adjusted for transition zones between layers and the post liquefaction volumetric strain has been weighed with depth (Robertson, 2014 and Cetin et al., 2009). Computer printouts of the liquefaction analyses are provided in Appendix E.

The liquefaction potential at the project site was evaluated using the 1997 NCEER Liquefaction Workshop and the Idriss and Boulanger (2008) methods. The 1997 NCEER methods utilize CPT cone readings from site exploration and earthquake magnitude/PGA estimates from the seismic hazard analysis. The resistance to liquefaction is plotted on a chart of cyclic shear stress ratio (CSR) versus a corrected tip pressures $Q_{tn,cs}$. The analysis was performed using a PGA_M value of 0.55g was used in the analysis with a 10 foot groundwater depth and a threshold factor of safety (FS) of 1.3.

The fines content of the liquefiable sands and silts increases their liquefaction resistance in that more ground motion cycles are required to fully develop the increased pore pressures. The CPT tip pressures (Qc) were adjusted to an equivalent clean sand pressure ($Q_{tn,cs}$) in accordance with NCEER (1998).

The soils encountered at the points of exploration included saturated sands and silty sands that could liquefy during a Maximum Considered Earthquake. Liquefaction can occur within a three-foot thick sand layer at a depth of 26 feet below ground surface and two isolated silt and sand layers at depths of 15 and 42 feet. The likely triggering mechanism for liquefaction appears to be strong groundshaking associated with the rupture of the Rico and Imperial fault. The analysis is summarized in the table below.

Liquefaction Induced Settlements: ***Based on empirical relationships, total induced settlements are estimated to be about ½ inch should liquefaction occur.*** Differential settlement is estimated at be two-thirds of the total potential settlement in accordance with California Special Publication 117. Accordingly, there is a potential for ⅓ inch of liquefaction induced differential settlement at the project site.

The differential settlement based on seismic settlements is estimated at 1 inch over a distance of 100 feet. Foundations should be designed for a maximum deflection of L/720.

Because of the depth of the liquefiable layer, the 15 foot thick non-liquefiable layer may act as a bridge over the liquefiable layer resulting in a fairly uniform ground surface settlement; therefore, wide area subsidence of the soil overburden would be the expected effect of liquefaction rather than bearing capacity failure of the proposed structures.

Liquefaction Induced Ground Failure: Based on research from Ishihara (1985) and Youd and Garris (1995) small ground fissure or sand boil formation is unlikely because of the thickness of the overlying unliquefiable soil. Sand boils are conical piles of sand derived from the upward flow of groundwater caused by excess porewater pressures created during strong ground shaking. Sand boils are not inherently damaging by themselves, but are an indication that liquefaction occurred at depth (Jones, 2003). Liquefaction induced lateral spreading is not expected to occur at this site due to the planar topography.

According to Youd (2005), if the liquefiable layer lies at a depth greater that about twice the height of a free face, lateral spread is not likely to develop. No slopes or free faces occur at this site except for the shallow retention basin, which depths are substantially above the first liquefiable layer.

Mitigation: Based on an estimate of less than ½ inch of liquefaction induced settlements, no ground improvement or deep foundation mitigation is required at this project site. The differential settlement caused by liquefaction is estimated at approximately ⅓ inch. The designer should utilize foundation designs which mitigate the liquefaction induced settlement.

Section 4
DESIGN CRITERIA

4.1 Site Preparation

Clearing and Grubbing: All surface improvements, debris or vegetation including grass, brush, and weeds on the site at the time of construction should be removed from the construction area. Root balls should be completely excavated. Organic strippings should be stockpiled and not used as engineered fill. All trash, construction debris, concrete slabs, old pavement, landfill, and buried obstructions such as old foundations and utility lines exposed during rough grading should be traced to the limits of the foreign material by the grading contractor and removed under our supervision. Any excavations resulting from site clearing should be sloped to a bowl shape to the lowest depth of disturbance and backfilled under the observation of the geotechnical engineer's representative.

Mass Grading: Prior to placing any fills, the surface 12 inches of native soil shall be scarified uniformly moisture conditioned to within 2% of optimum and compacted to at least 90% of ASTM D1557 maximum density. Onsite native soils used for fill should be placed in lifts no greater than 8 inches in loose thickness and compacted to a minimum of 90% of ASTM D1557 maximum dry density at optimum moisture ±2%.

Structural Pads Preparation: The existing surface soil within the inverter pad areas, battery storage container pads or electrical substation foundations area should be removed to 18 inches below the lowest foundation grade or 36 inches below the original grade (whichever is deeper), extending five (5) feet beyond all exterior wall/column lines (including adjacent concreted areas). Exposed subgrade should be scarified to a depth of 8 inches, uniformly moisture conditioned to 2 to 6% above optimum (silts) or 2% below to 4% above optimum (sands) and recompacted to 87 to 92% (silts) or a minimum of 90% (sands) of the maximum density determined in accordance with ASTM D1557 methods. During this process, the exposed surface will also be observed for any loose areas by wheel-rolling with heavy equipment. The exposed surface should then be tested at the rate of 1 test per 1,000 square foot or at least 2 tests per building pad, to conform to the above compaction requirements.

The native soil is suitable for use as engineered fill provided it is free from concentrations of organic matter or other deleterious material. The fill soil should be uniformly moisture conditioned by discing and watering to the limits specified above, placed in maximum 8-inch lifts (loose), and compacted to the limits specified above. Clay soil, if encountered, should not be incorporated into any engineered building pads.

Imported fill soils, if needed, should meet the USCS classifications of ML (non-plastic), SM, SP-SM, or SW-SM with a maximum rock size of 3 inches and no less than 5% passing the No. 200 sieve. The geotechnical engineer should approve imported fill soil sources before hauling material to the site. Imported fill should be placed in lifts no greater than 8 inches in loose thickness and compacted to a minimum of 90% of ASTM D1557 maximum dry density at optimum moisture ±2%. The geotechnical engineer should approve imported fill soil sources before hauling material to the site.

Subgrade Preparation for Mat Foundations: The native sandy soil within mat foundation areas should be removed to 18 inches below the bottom of the mat foundations to 2 feet beyond the edges of the foundation. Exposed subgrade should be scarified to a depth of 12 inches, uniformly moisture conditioned to ±2% of optimum moisture content, and recompacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

A minimum of 6-inches of Caltrans Class 2 aggregate base compacted to at least 95% of ASTM D1557 maximum density, shall be placed over the compacted subgrade prior to placing mat foundations.

Sidewalk and Concrete Hardscape Areas: In areas other than the building pad which are to receive sidewalks or area concrete slabs, the ground surface should be presaturated to a minimum depth of 24 inches and then scarified to 8 inches, moisture conditioned to a minimum of 2% below to 4% above optimum, and recompacted to a minimum of 90% of ASTM D1557 maximum density just prior to concrete placement.

Utility Trench Backfill: On-site soil free of debris, vegetation, and other deleterious matter is suitable for use as utility trench backfill above pipe zone. Native backfill should only be placed and compacted after encapsulating buried pipes with suitable bedding and pipe envelope material. Backfill soil of utility trenches within paved areas should be placed in layers not more than 8 inches in thickness and mechanically compacted to a minimum of 90% relative compaction (ASTM D1557) for trench backfill (above pipe zone). The top 12 inches in roadway areas shall be compacted to a minimum of 95%.

Observation and Density Testing: All site preparation and fill placement should be continuously observed and tested by a representative of a qualified geotechnical engineering firm. Full-time observation services during the excavation and scarification process is necessary to detect undesirable materials or conditions and soft areas that may be encountered in the construction area. The geotechnical firm that provides observation and testing during construction shall assume the responsibility of "*geotechnical engineer of record*" and, as such, shall perform additional tests and investigation as necessary to satisfy themselves as to the site conditions and the geotechnical parameters for site development.

Auxiliary Structures Foundation Preparation: Auxiliary structures such as free standing or retaining walls should have footings extended to a minimum of 30 inches below grade. The existing soil beneath the structure foundation prepared in the manner described for the building pad except the preparation needed only to extend 24 inches below and beyond the footing.

4.2 Foundations and Settlements

Shallow spread footings and continuous wall footings are suitable to support the battery storage containers provided they are founded on a layer of properly prepared and compacted soil as described in Section 4.1. The foundations may be designed using an allowable soil bearing pressure of 2,000 psf. The allowable soil pressure may be increased by 20% for each foot of embedment depth in excess of 18 inches and by one-third for short term loads induced by winds or seismic events. The maximum allowable soil pressure at increased embedment depths shall not exceed 3,000 psf.

Resistance to horizontal loads will be developed by passive earth pressure on the sides of footings and frictional resistance developed along the bases of footings and concrete slabs. Passive resistance to lateral earth pressure may be calculated using an equivalent fluid pressure of 300 pcf to resist lateral loadings. The top one foot of embedment should not be considered in computing passive resistance unless the adjacent area is confined by a slab or pavement. An allowable friction coefficient of 0.35 may also be used at the base of the footings to resist lateral loading.

All exterior footings should be embedded a minimum of 18 inches below the building support pad or lowest adjacent final grade, whichever is deeper. Minimum embedment depth of interior footings should be at least 12 inches into the building support pad to account for variable environmental conditions.

Interior and exterior embedment depths listed herein are minimum depths and greater depths/widths may be required by the structural engineer/designer and should be sufficient to limit differential movement to L/480 for center lift and L/720 for edge lift to comply with the current standards. Continuous wall footings should have a minimum width of 12 inches. Spread footings should have a minimum dimension of 24 inches and should be structurally tied to perimeter footings or grade beams. Concrete reinforcement and sizing for all footings should be provided by the structural engineer.

As an alternative to shallow spread foundations, flat plate structural mats may be used.

Flat Plate Structural Mats: Structural mats may be designed for a modulus of subgrade reaction (Ks) of 175 pci when placed on compacted native soil and 200 pci when placed on 6 inches of Class 2 aggregate base. The structure support pad shall be moisture conditioned and re-compacted as specified in Section 4.1 of this report. Resistance to horizontal loads will be developed by passive earth pressure on the sides of footings and frictional resistance developed along the bases of footings and concrete slabs. Passive resistance to lateral earth pressure may be calculated using an equivalent fluid pressure of 300 pcf to resist lateral loadings. The top one foot of embedment should not be considered in computing passive resistance unless the adjacent area is confined by a slab or pavement. An allowable friction coefficient of 0.35 may also be used at the base of the footings to resist lateral loading.

Settlements: Foundation movement under the estimated loadings and site conditions are estimated to not exceed 1 inch with differential movement of about two-thirds of total movement for the loading assumptions stated above when the subgrade preparation guidelines given above are followed.

4.3 Drilled Piers and Driven Steel Piles

Drilled Piers: Individual short piers should be adequate to support solar panel frames, inverter frames, and security camera poles. Embedment depth for short piers to resist lateral loads where no lateral constraint at ground surface is provided may be designed using the following formula per 2019 CBC Section 1807.3.2.1:

$$d = A/2\ [1 + (1+4.36h/A)^{1/2}]$$

where:

$A = 2.34P/S_1b$
b = Pier diameter in feet
d = Embedment depth in feet (but not over 12 feet for purpose of computing lateral pressure)
h = Distance in feet from ground surface to point of application of "P"
P = Applied lateral force in pounds
S_1 = Allowable lateral soil bearing pressure (basic value of 150 psf/ft. Isolated piers such solar panel short piers that are not adversely affected by a 0.5 inch motion at the ground surface due to short-term lateral loads are permitted to be designed using lateral soil bearing pressures equal to two times the provided value (300 psf/ft). Reduced lateral soil bearing pressures should be used for the security camera pole foundation designs to reduce pole sway in windy conditions.

The short pier foundations may be designed using an allowable soil bearing pressure of 2,000 psf for the native sandy soils.

***Installation*:** Excavation for piers should be inspected by the geotechnical consultant. A tremie pipe should be used to pour concrete from the bottom up and to ensure less than five feet of free fall. The structural steel and concrete should be placed immediately after drilling. Prior to placing any structural steel or concrete, loose soil or slough material should be removed from the bottom of the drilled pier excavation.

Driven Steel Piles: The use of driven steel posts requires special provisions for corrosion protection. Steel posts for PV panel mounting frames have been preliminary sized as W8x10 (frame and axle supports).

Vertical Capacity: Vertical capacity for the preliminary W8x10 steel post section is presented in Table 3. End bearing and skin friction parameters have been used to determine the allowable shaft capacity. The allowable capacities include a factor of safety of 2.5. The allowable vertical compression capacities may be increased by 33 percent to accommodate temporary loads from wind or seismic forces. The allowable vertical shaft capacities are based on the supporting capacity of the soil.

Lateral Capacity: The allowable lateral capacity for a W8x10 steel post section at 5, 6 and 8 feet embedment depths are given in Table 3. The allowable lateral capacity is based on a deflection of one-half inch at the top of the steel post section. If greater deflection can be tolerated, lateral load capacity can be increased directly in proportion to a maximum of one inch deflection. Axial and lateral loads were applied at 4 feet above ground surface.

Table 3: Allowable Capacities of Driven Steel Posts

Pile Type:	Driven W8x10		
Pile Length (ft):	**9 ft**	**10 ft**	**12 ft**
Specified Tip Depth (ft):	**5 ft**	**6 ft**	**8 ft**
Height Above Ground (ft):	**4 ft**	**4 ft**	**4 ft**
Allowable Axial Capacity (kips) – FS=2.5:	0.66	0.90	1.35
Allowable Uplift Capacity (kips) – FS=2.5:	0.30	0.40	0.63
Lateral Load – Free Head Condition (kips):	0.65	0.95	1.16
Top Deflection (in) – Free Head Condition	0.50	0.50	0.50
Maximum Moment from Lateral Load, Free Head Condition (ft-kips):	3.7	5.6	7.0
Depth of Maximum Moment (from Top of Post), Free Head (ft):	6.0	6.3	6.7

Recommendations for other post sections can be made available upon request.

Soil Parameters: Interpretive soil parameters of the subsoil for AllPile software are presented in Table 4 below.

Table 4: Soil Strength Parameters for AllPile Program

Layer Type	Depth (ft)	Unit Weight (pcf)	Friction Angle (deg)	Cohesion (ksf)	Lateral Soil Modulus, k (pci) (*)	Strain Factor, E50 or Dr (%)
SP-SM	0 to 2	115	32°	0.0	500	35
SP	2 to 12	115	35º	0.0	110	55
CL-ML	12 to 16	125	---	1.25	315	0.85
SP-SM	16 to 20	115	34º	0.0	50	45

(*) k value for static loading. For cycling loading, use 50% of listed value.

Settlement: Total settlements of less than ¼ inch, and differential movement of about two-thirds of total movement for single piles designed according to the preceding recommendations.

Axial Load Group Effect: Reduction in axial load capacity shall be considered necessary for group effect. The axial load capacity shall be reduced by an efficiency factor, η. Efficiency factor, η should be 0.65 for shafts with spacing center to center equal to 2.5 shaft diameters and increases linearly to 1.0 for shafts with center to center spacing equal to 6.0 shaft diameters or more. The factor of safety of the group is the same as that of individual shaft elements.

4.4 Drilled Pier Foundations

Substation structural components such as the A-frame structures, bus supports, dead-end frames, masts, switch, surge arrester, CVT stands and new steel gen-tie line poles may be supported on cast-in-place drilled piers. Design criteria are provided below for the drilled pier foundations.

***Vertical Capacity*:** Vertical capacity for 24, 36, 60 and 72 inch diameter shafts are presented in Plate F-1 in Appendix F. Capacities for other shaft sizes can be determined in direct proportion to shaft diameters. Point bearing and skin friction parameters have been used to determine the allowable shaft capacity. The allowable capacities include a factor of safety of 2.5. The allowable vertical compression capacities may be increased by 33 percent to accommodate temporary loads that result from wind or seismic forces.

***Lateral Capacity*:** The allowable lateral capacity for 24, 36, 60 and 72 inch diameter shafts are given in the table shown below for electric cone penetrometer sounding CPT-11. The horizontal deflection at the top of the drilled pier for the lateral loads indicated is one-half inch (0.50 inch).

Table 5: Lateral Capacities of Drilled Pier Foundations – CPT-11 Location

Shaft Diameter (in.)	**24**		**36**		**60**		**72**	
Head Condition	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed
Allowable Head Deflection (in.)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Minimum Length (ft.)	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Lateral Capacity (kips)	20.4	82	28.8	148	38	239	40.5	272
Maximum Moment (foot-kips)	62.3	-487.5	90.8	-958.3	118.3	-1616.7	125	-1850
@Depth from Pier Head (ft.)	4.5	0	4.5	0	4.5	0	4.5	0
Minimum Length (ft.)	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**20**
Lateral Capacity (kips)	42.3	98	86	195	138	512	155	698
Maximum Moment (foot-kips)	185	-501.7	450	-1366.7	756.7	-5500	850	-8200
@Depth from Pier Head (ft.)	7.0	0	8.1	0	8.3	0	8.4	0
Minimum Length (ft.)	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**
Lateral Capacity (kips)	42.8	100	46.5	221	228	550	272	735
Maximum Moment (foot-kips)	187.5	512.5	540.8	-1466.7	1608.3	-5333.3	1958.3	-8500
@Depth from Pier Head (ft.)	7.0	0	8.8	0	11.0	0	11.7	0

Settlement: Total static (non-seismic) settlements of less than ¼ inch are anticipated for single piles designed according to the preceding recommendations. If pile spacing is a least 2.5 pile diameters center-to-center, no reduction in axial load capacity is considered necessary for a group effect.

Uplift Capacity: Pier capacity in tension should be taken as 50% of the compression capacity.

Soil Parameters: Interpretive engineering soil parameters of the subsurface soil for Allpile Computer Program are presented in the tables below.

Table 6: Drilled Pier Soil Parameters (CPT-11 Location)

Layer Type	Depth (ft)	Unit Weight (pcf)	Friction Angle (deg)	Cohesion (ksf)	Modulus of Subgrade Reaction (pci)	E50 or Dr
SP-SM	0 to 2	115	32°	0.0	50	35
SP	2 to 24	115	36º	0.0	135	60
SM	24 to 29	115	35º	0.0	70	55
SW	29 to 42	115	38º	0.0	110	70
ML	42 to 47	120	26º	0.50	300	0.85
SP	47 to 50	115	38º	0.0	110	70

***Installation*:** The drilled piers shall be placed in conformance to ACI 336 guidelines. Excavation for piers should be inspected by the geotechnical consultant. The bottom of the excavation for piers should be reasonably free of loose or slough material. A tremie pipe should be used to place concrete from the bottom up and to ensure less than five feet of free fall. Steel reinforcement and concrete shall be placed immediately after drilling.

Due to the presence of granular soils, drilled piers shall be cased to prevent caving or lateral deformation. Groundwater was encountered in Boring B-3, proposed electrical substation area, (Plate B-14) at about 9.0 feet at the time of exploration. Groundwater was encountered between 18 and 20 feet in Boring B-2 and B-1 respectively. Groundwater is likely to be present at the interface between surface sands and underlying clays. The structural steel and concrete should be placed immediately after drilling. Prior to placing any structural steel or concrete, loose soil or slough material should be removed from the bottom of the drilled pier excavation.

4.5 Slabs-On-Grade

Structural Concrete: Structural concrete slabs are those slabs (foundations) that underlie structures or shades. These concrete slab should have a minimum thickness of 5 inches. The concrete slabs should be underlain by a 10-mil polyethylene vapor retarder that works as a capillary break to reduce moisture migration into the slab section. The vapor retarder should be properly lapped and continuously sealed.

The vapor retarder should be overlain by 2 inches of clean sand (Sand Equivalent SE>30). Concrete slabs may be placed without a sand cover directly over a 15-mil vapor retarder (Stego-Wrap or equivalent).

Slab thickness and steel reinforcement are minimums only and should be verified by the structural engineer/designer knowing the actual project loadings. All steel components of the foundation system should be protected from corrosion by maintaining a 3-inch minimum concrete cover of densely consolidated concrete at footings (by use of a vibrator). The construction joint between the foundation and any sidewalks placed adjacent to foundations should be sealed with a polyurethane based non-hardening sealant to prevent moisture migration between the joint. Epoxy coated embedded steel components or permanent waterproofing membranes placed at the exterior footing sidewall may also be used to mitigate the corrosion potential of concrete placed in contact with native soil.

Control joints should be provided in all concrete slabs-on-grade at a maximum spacing (in feet) of 2 to 3 times the slab thickness (in inches) as recommended by American Concrete Institute (ACI) guidelines. All joints should form approximately square patterns to reduce randomly oriented contraction cracks. Contraction joints in the slabs should be tooled at the time of the pour or sawcut (¼ of slab depth) within 6 to 8 hours of concrete placement. Construction (cold) joints in foundations and area flatwork should either be thickened butt-joints with dowels or a thickened keyed-joint designed to resist vertical deflection at the joint. All joints in flatwork should be sealed to prevent moisture, vermin, or foreign material intrusion. Precautions should be taken to prevent curling of slabs in this arid desert region (refer to ACI guidelines).

Non-structural Concrete: All non-structural independent flatwork (sidewalks and housekeeping slabs) shall be a minimum of 4 inches thick and should be placed on a minimum of 2 inches of concrete sand or aggregate base, dowelled to the perimeter foundations where adjacent to the building to prevent separation. The ground surface should be pre-saturated to a minimum of 24 inches and then scarified to 8 inches, moisture conditioned to minimum of 2% over optimum, and recompacted to 90% of ASTM D1557 maximum relative density just prior to concrete placement. All flatwork should be jointed in square patterns and at irregularities in shape at a maximum spacing of 8 feet or the least width of the sidewalk.

4.6 Concrete Mixes and Corrosivity

Selected chemical analyses for corrosivity were conducted on bulk samples of the near surface soil from the project site (Appendix E). The native soils were found to have S0 (low) levels of sulfate ion concentration (40 to 390 ppm). Sulfate ions in high concentrations can attack the cementitious material in concrete, causing weakening of the cement matrix and eventual deterioration by raveling.

The following table provides American Concrete Institute (ACI) recommended cement types, water-cement ratio and minimum compressive strengths for concrete in contact with soils:

Table 7. Concrete Mix Design Criteria due to Soluble Sulfate Exposure

Sulfate Exposure Class	Water-soluble Sulfate (SO_4) in soil, ppm	Cement Type	Maximum Water-Cement Ratio by weight	Minimum Strength f'c (psi)
S0	0-1,000	–	–	–
S1	1,000-2,000	II	0.50	4,000
S2	2,000-20,000	V	0.45	4,500
S3	Over 20,000	V (plus Pozzolon)	0.45	4,500

Note: From ACI 318-14 Table 19.3.1.1 and Table 19.3.2.1

However, in consideration of general corrosive environment in the region, it is recommended a minimum of 6.0 sacks per cubic yard of concrete (4,000 psi) of Type V Portland Cement with a maximum water/cement ratio of 0.50 (by weight) should be used for concrete placed in contact with native soil on this project (sitework including sidewalks, driveways, housekeeping slabs and foundations). Admixtures may be required to allow placement of this low water/cement ratio concrete.

The native soil has low levels of chloride ion concentration (30 to 170 ppm). Chloride ions can cause corrosion of reinforcing steel, anchor bolts and other buried metallic conduits. Resistivity determinations on the soil indicate moderate to very severe potential for metal loss because of electrochemical corrosion processes. Mitigation of the corrosion of steel can be achieved by using steel elements coated with epoxy corrosion inhibitors, asphaltic and epoxy coatings, cathodic protection or by zinc galvanizing.

Foundation designs shall provide a minimum concrete cover of three (3) inches around steel reinforcing or embedded components (anchor bolts, etc.) exposed to native soil or landscape water (to 18 inches above grade). If the 3-inch concrete edge distance cannot be achieved, all embedded steel components (anchor bolts, etc.) shall be epoxy coated for corrosion protection (in accordance with ASTM D3963/A934) or a corrosion inhibitor and a permanent waterproofing membrane shall be placed along the exterior face of the exterior footings. ***Hold-down straps should not be used at foundation edges due to corrosion of metal at its protrusion from the slab edge.*** Additionally, the concrete should be thoroughly vibrated at footings during placement to decrease the permeability of the concrete.

4.7 Excavations

All site excavations should conform to CalOSHA requirements for Type C soil. The contractor is solely responsible for the safety of workers entering trenches. Temporary excavations with depths of 4 feet or less may be no steeper than 1:1 (horizontal:vertical). Sandy soil slopes should be kept moist, but not saturated, to reduce the potential of raveling or sloughing. Excavations deeper than 4 feet will require shoring or slope inclinations in conformance to CAL/OSHA regulations for Type C soil. Surcharge loads of stockpiled soil or construction materials should be set back from the top of the slope a minimum distance equal to the height of the slope.

All permanent slopes should not be steeper than 3:1 to reduce wind and rain erosion. Protected slopes with ground cover may be as steep as 2:1. However, maintenance with motorized equipment may not be possible at this inclination.

4.8 Seismic Design

This site is located in the seismically active southern California area and the site structures are subject to strong ground shaking due to potential fault movements along the Imperial, Rico and Brawley Faults. Engineered design and earthquake-resistant construction are the common solutions to increase safety and development of seismic areas. Designs should comply with the latest edition of the CBC for Site Class D using the seismic coefficients given in Section 3.6 and Table 2 of this report.

4.9 All Weather Access Roadways

Unpaved roads may be used for stabilized roadways. The unpaved roads should consist of 12 inches of native soils compacted to 95% of ASTM D1557 maximum density at a minimum of optimum moisture with a 4 inch layer of Class 2 aggregate base compacted to a minimum of 95% of ASTM D1557 maximum density placed over the compacted subgrade.

Cement stabilization is an alternative for internal road stabilization within this project since the existing subgrade is comprised of fine to medium grained sands. An 80,000 lb. two-axle truck (fire truck) was considered for the subgrade soil stabilization recommendations. Soil–cement stabilization of the subgrade soils will result in a Gravel Factor for the treated depth, typically in the range of 1.2 to 1.5.

A minimum of 8 inches of cement-treated subgrade soil (estimated at 4% by weight) compacted to 95% minimum should yield a minimum Unconfined Compressive Strength of 300 psi. The cement application ratio should be confirmed through proper testing to obtain the minimum Unconfined Compressive Strength of 300 psi. The 80,000 lb. axle load will be adequately supported by the compacted soil–cement.

Section 5
LIMITATIONS AND ADDITIONAL SERVICES

5.1 Limitations

The findings and professional opinions within this report are based on current information regarding the proposed 100MW Viking photo-voltaic solar power generation facility situated on the approximately 600-acre site located at the east end of Nelson Pit Road east of the East Highline Canal approximately 6 miles east to southeast of Holtville, California. The conclusions and professional opinions of this report are invalid if:

- Structural loads change from those stated or the structures are relocated.
- The Additional Services section of this report is not followed.
- This report is used for adjacent or other property.
- Changes of grade or groundwater occur between the issuance of this report and construction other than those anticipated in this report.
- Any other change that materially alters the project from that proposed at the time this report was prepared.

This report was prepared according to the generally accepted *geotechnical engineering standards of practice* that existed in Imperial County at the time the report was prepared. No express or implied warranties are made in connection with our services.

Findings and professional opinions in this report are based on selected points of field exploration, geologic literature, limited laboratory testing, and our understanding of the proposed project. Our analysis of data and professional opinions presented herein are based on the assumption that soil conditions do not vary significantly from those found at specific exploratory locations. Variations in soil conditions can exist between and beyond the exploration points or groundwater elevations may change. The nature and extend of such variations may not become evident until, during or after construction. If variations are detected, we should immediately be notified as these conditions may require additional studies, consultation, and possible design revisions.

Environmental or hazardous materials evaluations were not performed by Landmark for this project. Landmark will assume no responsibility or liability whatsoever for any claim, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

The client has responsibility to see that all parties to the project including designer, contractor, and subcontractor are made aware of this entire report within a reasonable time from its issuance. This report should be considered invalid for periods after two years from the date of report issuance without a review of the validity of the findings and professional opinions by our firm, because of potential changes in the Geotechnical Engineering Standards of Practice. This report is based upon government regulations in effect at the time of preparation of this report. Future changes or modifications to these regulations may require modification of this report. Land or facility use, on and off-site conditions, regulations, design criteria, procedures, or other factors may change over time, which may require additional work. Any party other than the client who wishes to use this report shall notify Landmark of such intended use. Based on the intended use of the report, Landmark may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Landmark from any liability resulting from the use of this report by any unauthorized party and client agrees to defend, indemnify, and hold Landmark harmless from any claim or liability associated with such unauthorized use or non-compliance.

This report contains information that may be useful in the preparation of contract specifications. However, the report is not worded is such a manner that we recommend its use as a construction specification document without proper modification. The use of information contained in this report for bidding purposes should be done at the contractor's option and risk.

5.2 Plan Review

Landmark Consultants, Inc. should be retained during development of design and construction documents to check that the geotechnical professional opinions are appropriate for the proposed project and that the geotechnical professional opinions are properly interpreted and incorporated into the documents. Landmark should have the opportunity to review the final design plans and specifications for the project prior to the issuance of such for bidding.

Governmental agencies may require review of the plans by the geotechnical engineer of record for compliance to the geotechnical report.

5.3 Additional Services

We recommend that Landmark Consultant be retained to provide the tests and observations services during construction. *The geotechnical engineering firm providing such tests and observations shall become the geotechnical engineer of record and assume responsibility for the project.*

Landmark Consultants, Inc. professional opinions for this site are, to a high degree, dependent upon appropriate quality control of subgrade preparation, fill placement, and foundation construction. Accordingly, the findings and professional opinions in this report are made contingent upon the opportunity for Landmark Consultants to observe grading operations and foundation excavations for the proposed construction.

If parties other than Landmark Consultants, Inc. are engaged to provide observation and testing services during construction, such parties must be notified that they will be required to assume complete responsibility as the geotechnical engineer of record for the geotechnical phase of the project by concurring with the professional opinions in this report and/or by providing alternative professional guidance.

Additional information concerning the scope and cost of these services can be obtained from our office.

TABLES

Table 1
Summary of Characteristics of Closest Known Active Faults

Fault Name	Approximate Distance (miles)	Approximate Distance (km)	Maximum Moment Magnitude (Mw)	Fault Length (km)	Slip Rate (mm/yr)
Rico *	7.1	11.4			
Imperial	7.9	12.6	7	62 ± 6	20 ± 5
Brawley *	11.4	18.3			
Superstition Hills	18.9	30.2	6.6	23 ± 2	4 ± 2
Algodones *	19.7	31.5			
Cerro Prieto *	22.9	36.6			
Superstition Mountain	24.4	39.0	6.6	24 ± 2	5 ± 3
Unnamed 2*	24.8	39.6			
Unnamed 1*	27.4	43.9			
Borrego (Mexico)*	28.0	44.7			
Cucapah (Mexico)*	28.2	45.1			
Pescadores (Mexico)*	28.6	45.8			
Yuha*	29.1	46.5			
Laguna Salada	29.4	47.0	7	67 ± 7	3.5 ± 1.5
Shell Beds	32.3	51.7			
Yuha Well *	32.6	52.2			
Vista de Anza*	36.0	57.6			
Elmore Ranch	36.1	57.7	6.6	29 ± 3	1 ± 0.5
Painted Gorge Wash*	36.8	58.9			
Ocotillo*	40.2	64.4			
Elsinore - Coyote Mountain	43.7	69.9	6.8	39 ± 4	4 ± 2
San Jacinto - Borrego	43.8	70.1	6.6	29 ± 3	4 ± 2

* Note: Faults not included in CGS database.

Table 2
2019 California Building Code (CBC) and ASCE 7-16 Seismic Parameters

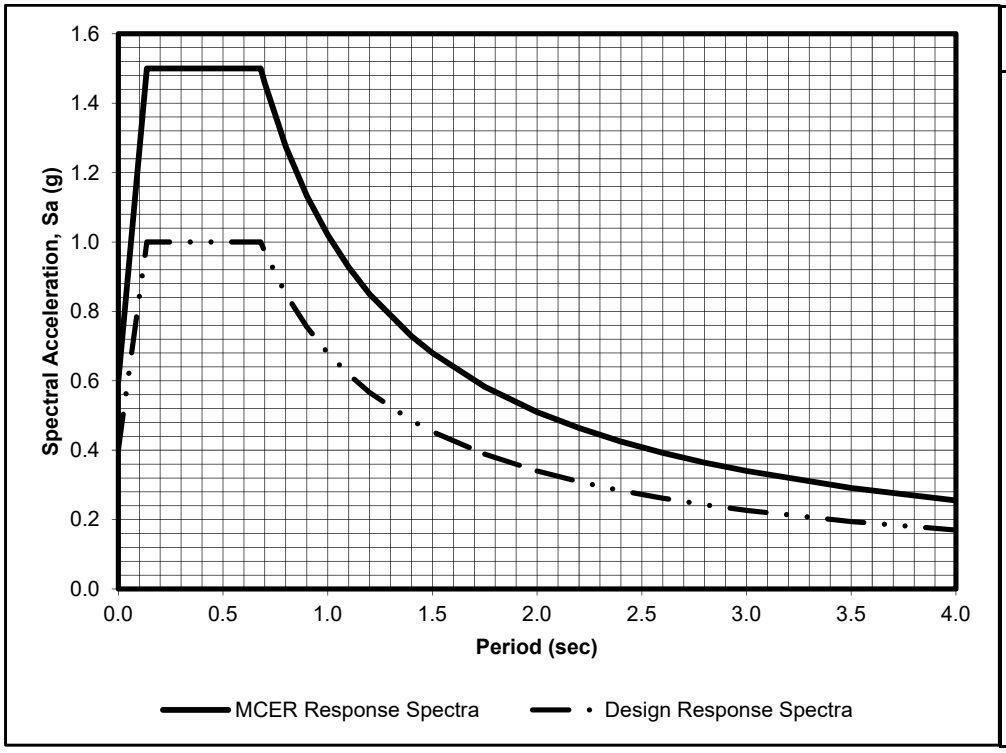
			ASCE 7-16 Reference
Soil Site Class:	**D**		Table 20.3-1
Latitude:	32.8041	N	
Longitude:	-115.2781	W	
Risk Category:	II		
Seismic Design Category:	D		

Maximum Considered Earthquake (MCE) Ground Motion

Mapped MCE_R Short Period Spectral Response	S_s	1.500 g	ASCE Figure 22-1	
Mapped MCE_R 1 second Spectral Response	S_1	0.600 g	ASCE Figure 22-2	
Short Period (0.2 s) Site Coefficient	F_a	1.00	ASCE Table 11.4-1	
Long Period (1.0 s) Site Coefficient	F_v	1.70	ASCE Table 11.4-2	
MCE_R Spectral Response Acceleration Parameter (0.2 s)	S_{MS}	1.500 g	= Fa * S_s	ASCE Equation 11.4-1
MCE_R Spectral Response Acceleration Parameter (1.0 s)	S_{M1}	1.020 g	= Fv * S_1	ASCE Equation 11.4-2

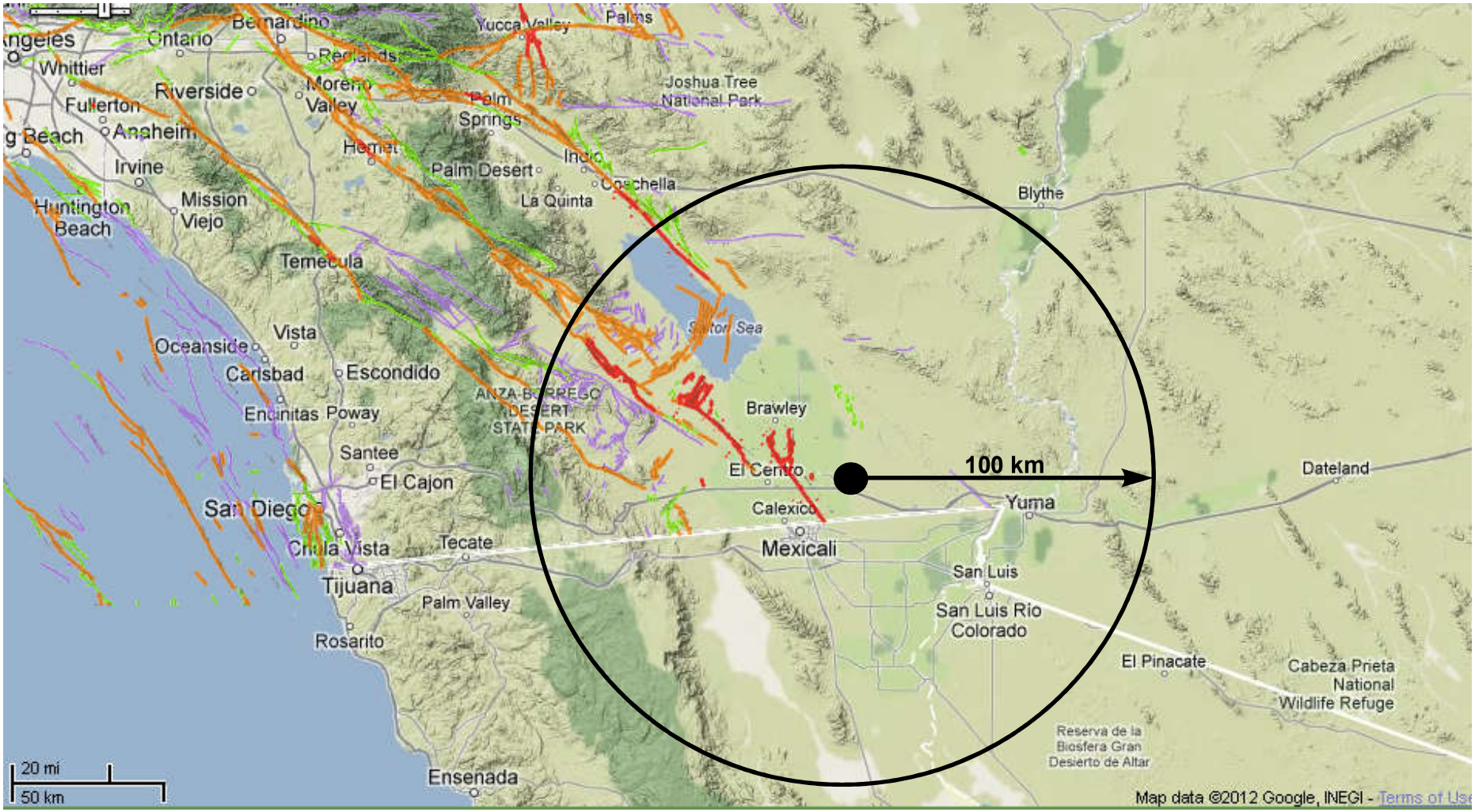
Design Earthquake Ground Motion

Design Spectral Response Acceleration Parameter (0.2 s)	S_{DS}	1.000 g	= 2/3*S_{MS}	ASCE Equation 11.4-3
Design Spectral Response Acceleration Parameter (1.0 s)	S_{D1}	0.680 g	= 2/3*S_{M1}	ASCE Equation 11.4-4
Risk Coefficient at Short Periods (less than 0.2 s)	C_{RS}	0.950		ASCE Figure 22-17
Risk Coefficient at Long Periods (greater than 1.0 s)	C_{R1}	0.924		ASCE Figure 22-18
	T_L	8.00 sec		ASCE Figure 22-12
	T_O	0.14 sec	=0.2*S_{D1}/S_{DS}	
	T_S	0.68 sec	=S_{D1}/S_{DS}	
Peak Ground Acceleration	PGA_M	0.55 g		ASCE Equation 11.8-1



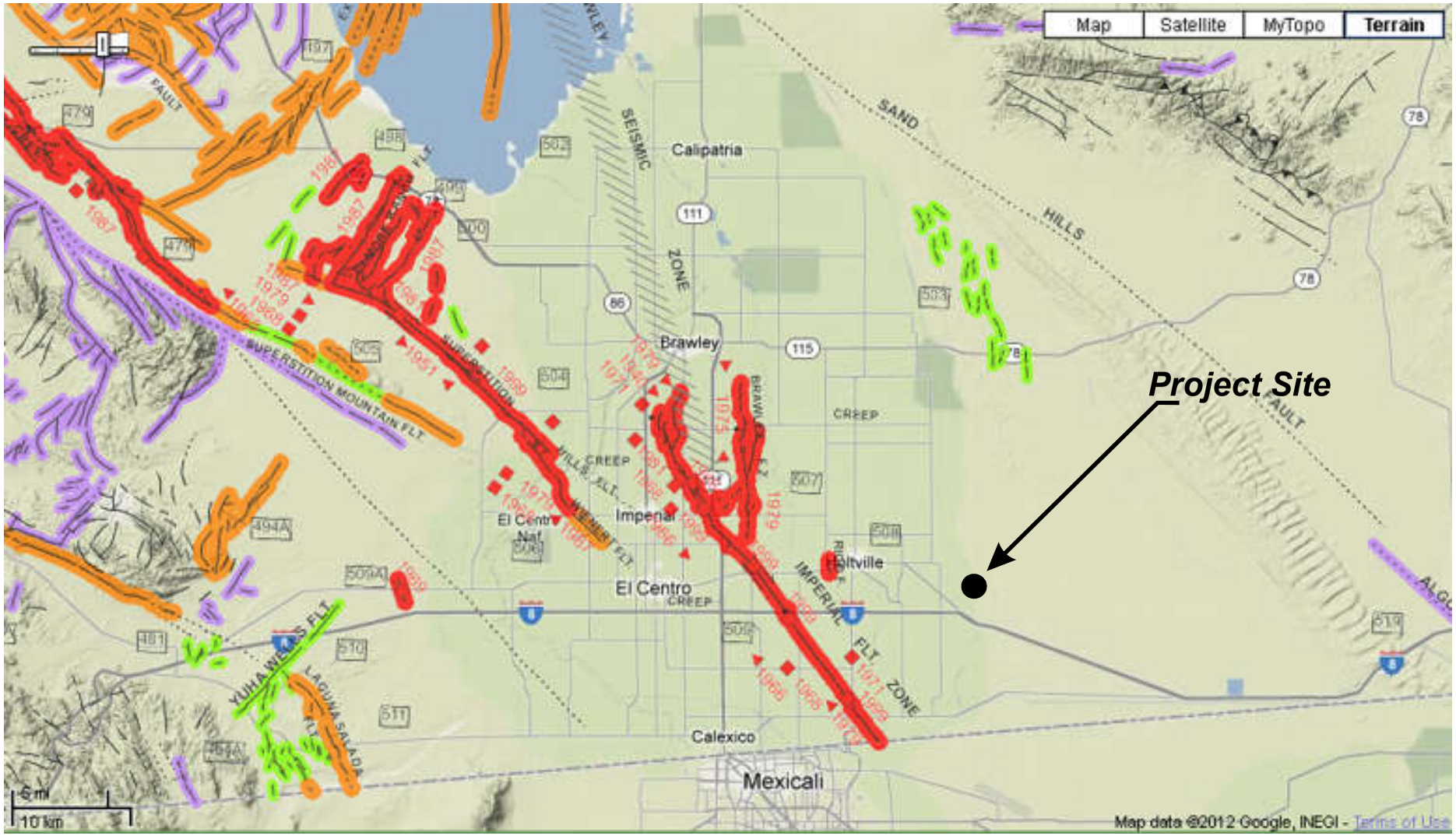
Period T (sec)	Sa (g)	MCE_R Sa (g)
0.00	0.40	0.60
0.14	1.00	1.50
0.68	1.00	1.50
0.70	0.97	1.46
0.80	0.85	1.28
0.90	0.76	1.13
1.00	0.68	1.02
1.10	0.62	0.93
1.20	0.57	0.85
1.20	0.57	0.85
1.40	0.49	0.73
1.50	0.45	0.68
1.75	0.39	0.58
2.00	0.34	0.51
2.20	0.31	0.46
2.40	0.28	0.43
2.60	0.26	0.39
2.80	0.24	0.36
3.00	0.23	0.34
3.50	0.19	0.29
4.00	0.17	0.26

FIGURES



Source: California Geological Survey 2010 Fault Activity Map of California
http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html#

LANDMARK Geo-Engineers and Geologists **Project No.: LE20189**	**Regional Fault Map**	**Figure 1**



Source: California Geological Survey 2010 Fault Activity Map of California
http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html#

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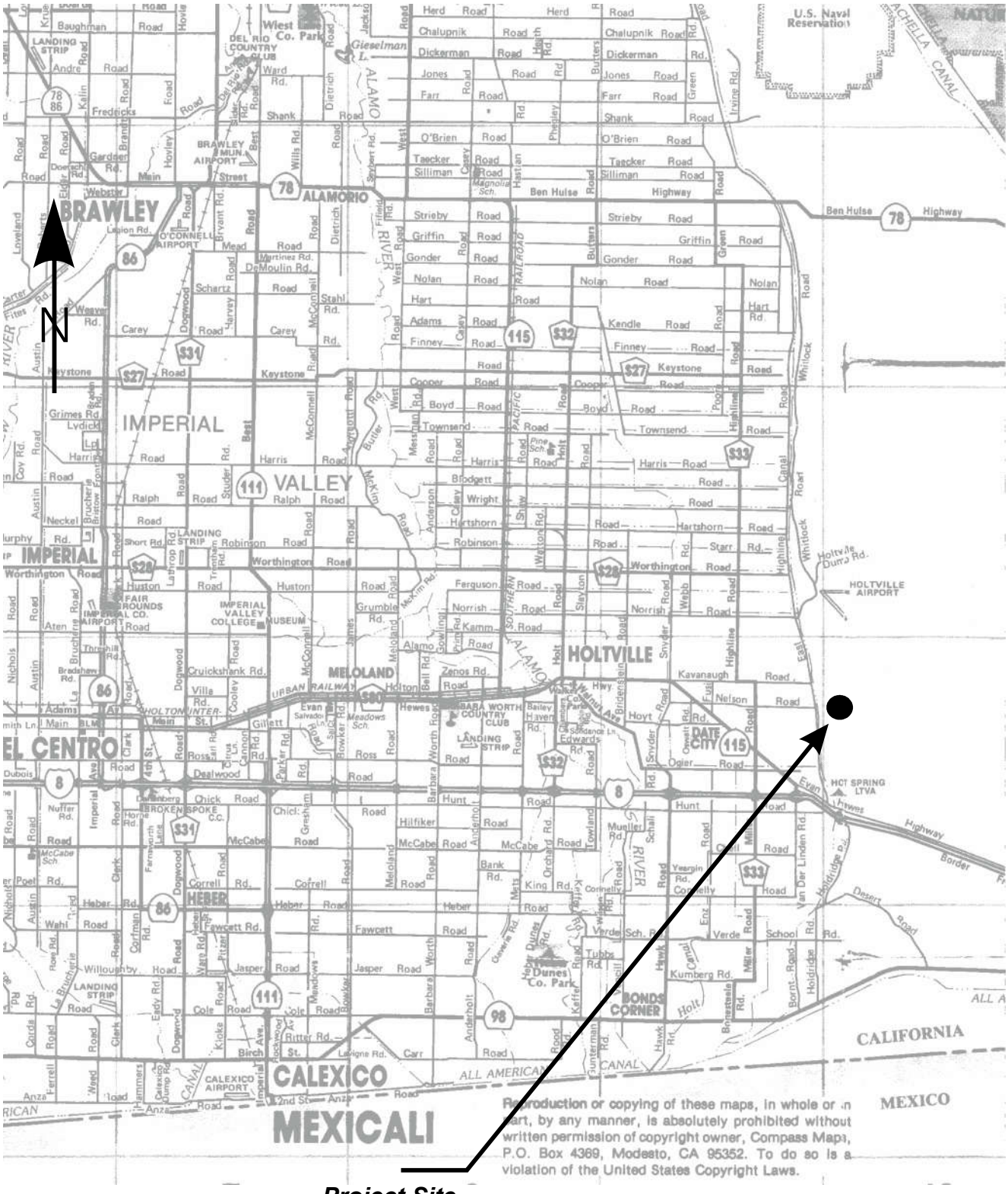
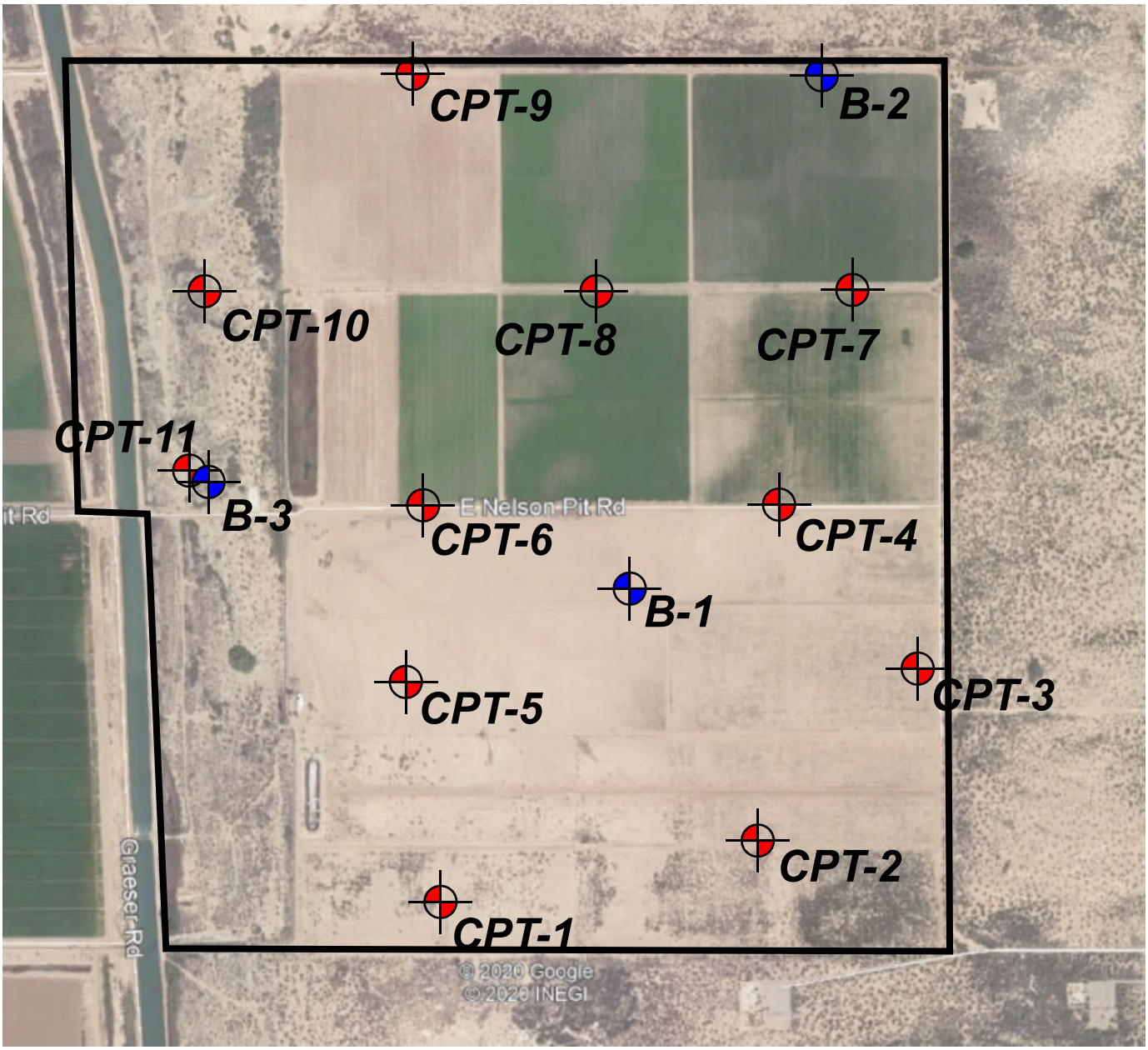
Map of Local Faults

Figure 2

APPENDIX A



LANDMARK Geo-Engineers and Geologists **Project No.: LE20189**	**Vicinity Map**	**Plate A-1**



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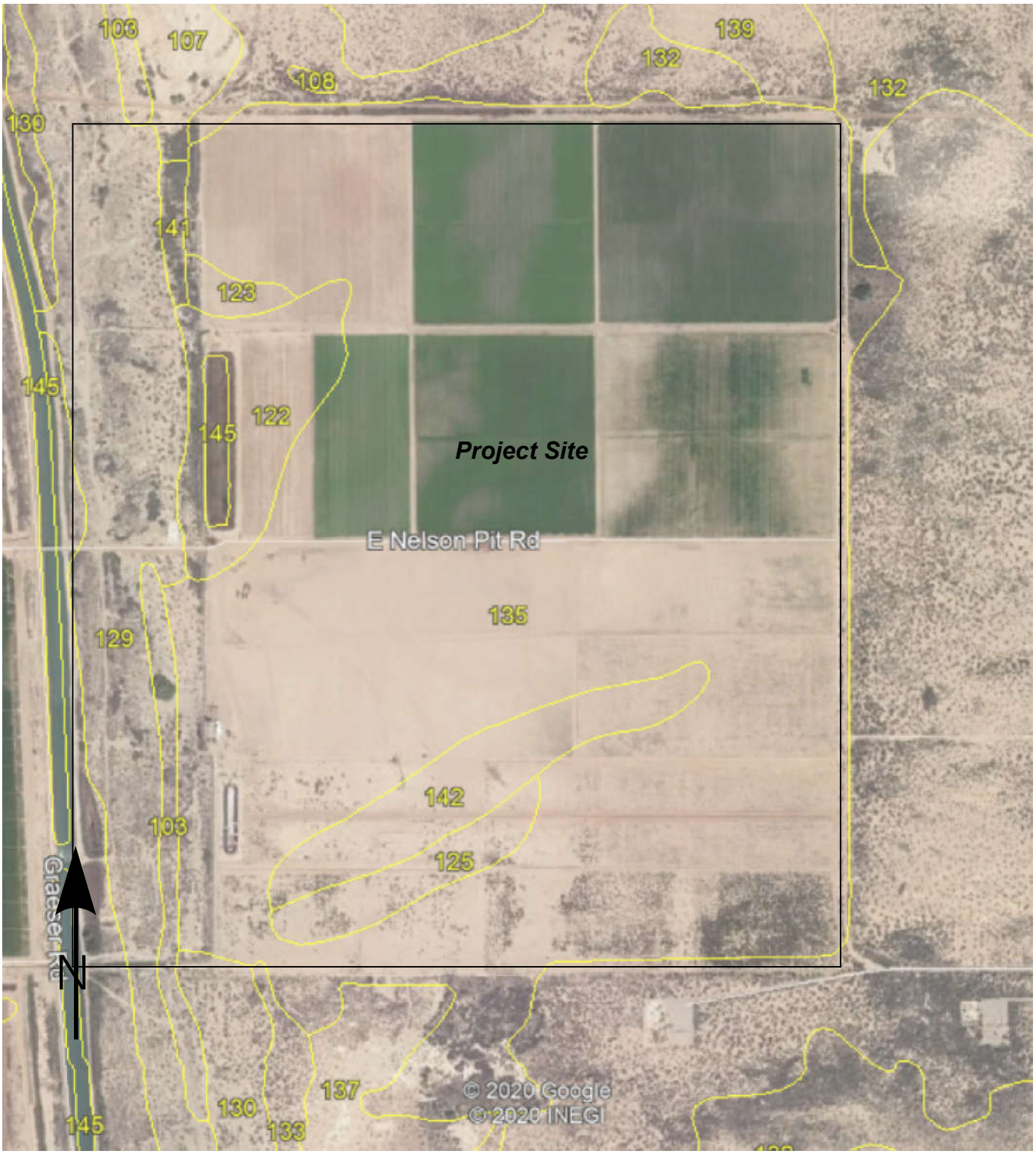
Site and Exploration Map

Plate
A-2



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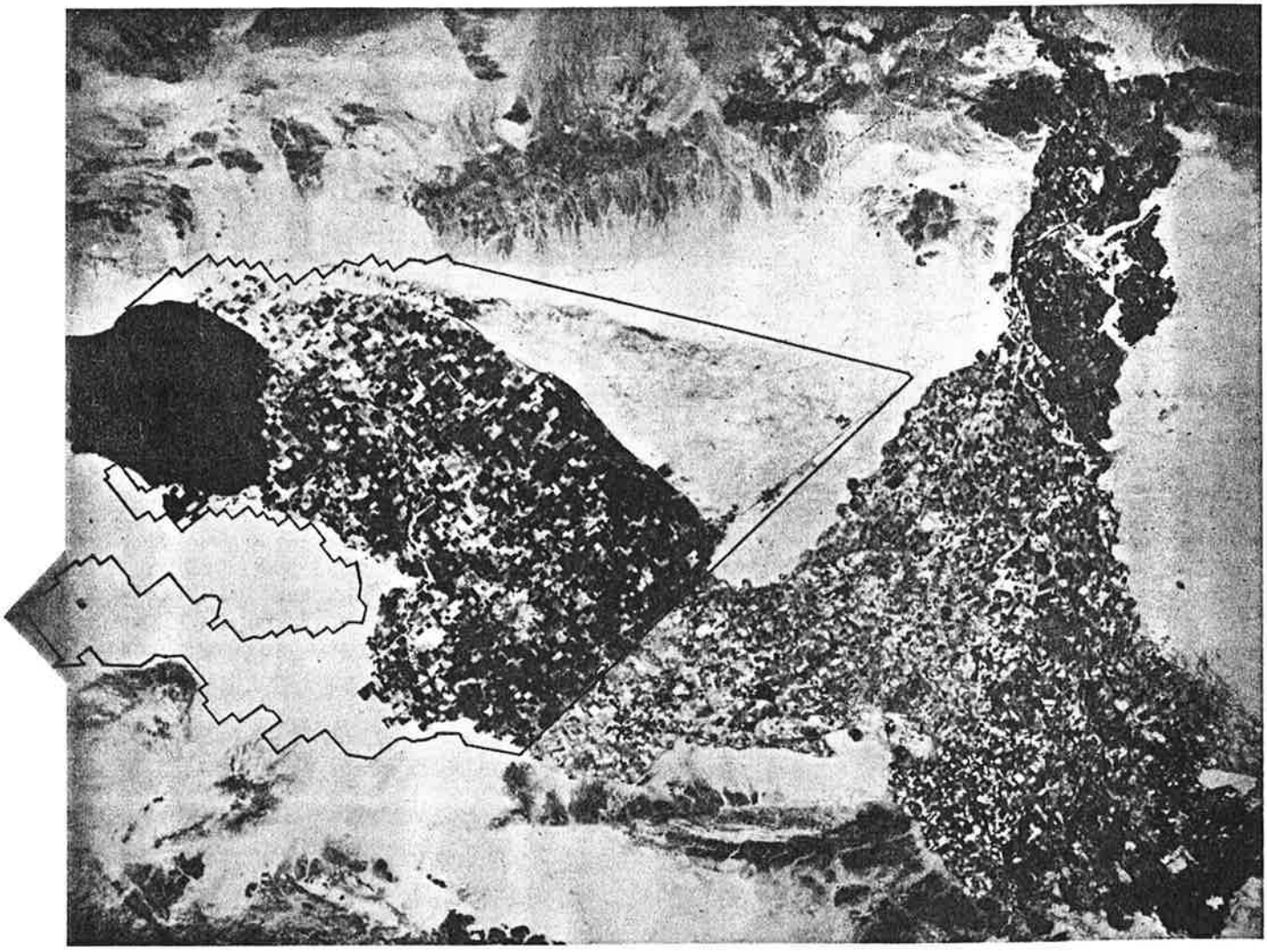
Soil Survey Map

Plate
A-3

Soil Survey of

IMPERIAL COUNTY CALIFORNIA IMPERIAL VALLEY AREA



United States Department of Agriculture Soil Conservation Service
in cooperation with
University of California Agricultural Experiment Station
and
Imperial Irrigation District

TABLE 11.--ENGINEERING INDEX PROPERTIES

[The symbol > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
100---------- Antho	0-13	Loamy fine sand	SM	A-2	0	100	100	75-85	10-30	---	NP
	13-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	90-100	75-95	50-60	15-40	---	NP
101*:											
Antho----------	0-8	Loamy fine sand	SM	A-2	0	100	100	75-85	10-30	---	NP
	8-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	90-100	75-95	50-60	15-40	---	NP
Superstition------	0-6	Fine sand-------	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
102*. Badland											
103---------- Carsitas	0-10	Gravelly sand---	SP, SP-SM	A-1, A-2	0-5	60-90	50-85	30-55	0-10	---	NP
	10-60	Gravelly sand, gravelly coarse sand, sand.	SP, SP-SM	A-1	0-5	60-90	50-85	25-50	0-10	---	NP
104* Fluvaquents											
105---------- Glenbar	0-13	Clay loam-------	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
106---------- Glenbar	0-13	Clay loam-------	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
107*---------- Glenbar	0-13	Loam----------	ML, CL-ML, CL	A-4	0	100	100	100	70-80	20-30	NP-10
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	95-100	75-95	35-45	15-30
108---------- Holtville	0-14	Loam----------	ML	A-4	0	100	100	85-100	55-95	25-35	NP-10
	14-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
109---------- Holtville	0-17	Silty clay------	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	17-24	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-35	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
	35-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP
110---------- Holtville	0-17	Silty clay------	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	17-24	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-35	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	55-85	25-35	NP-10
	35-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
111*:											
Holtville	0-10	Silty clay loam	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	10-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
Imperial	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
112	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
113	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay, clay, silty clay loam.	CH	A-7	0	100	100	100	85-95	50-70	25-45
114	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
Imperial	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
115*:											
Imperial	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
116*:											
Imperial	0-13	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	13-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
117, 118	0-12	Loam	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
Indio	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
119*:											
Indio	0-12	Loam	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
Vint	0-10	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	25-35	---	NP
	10-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
120*	0-12	Loam	ML, CL-ML	A-4	0	100	95-100	75-85	55-65	20-30	NP-10
Laveen	12-60	Loam, very fine sandy loam.	ML, CL-ML	A-4	0	95-100	85-95	70-80	55-65	15-25	NP-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

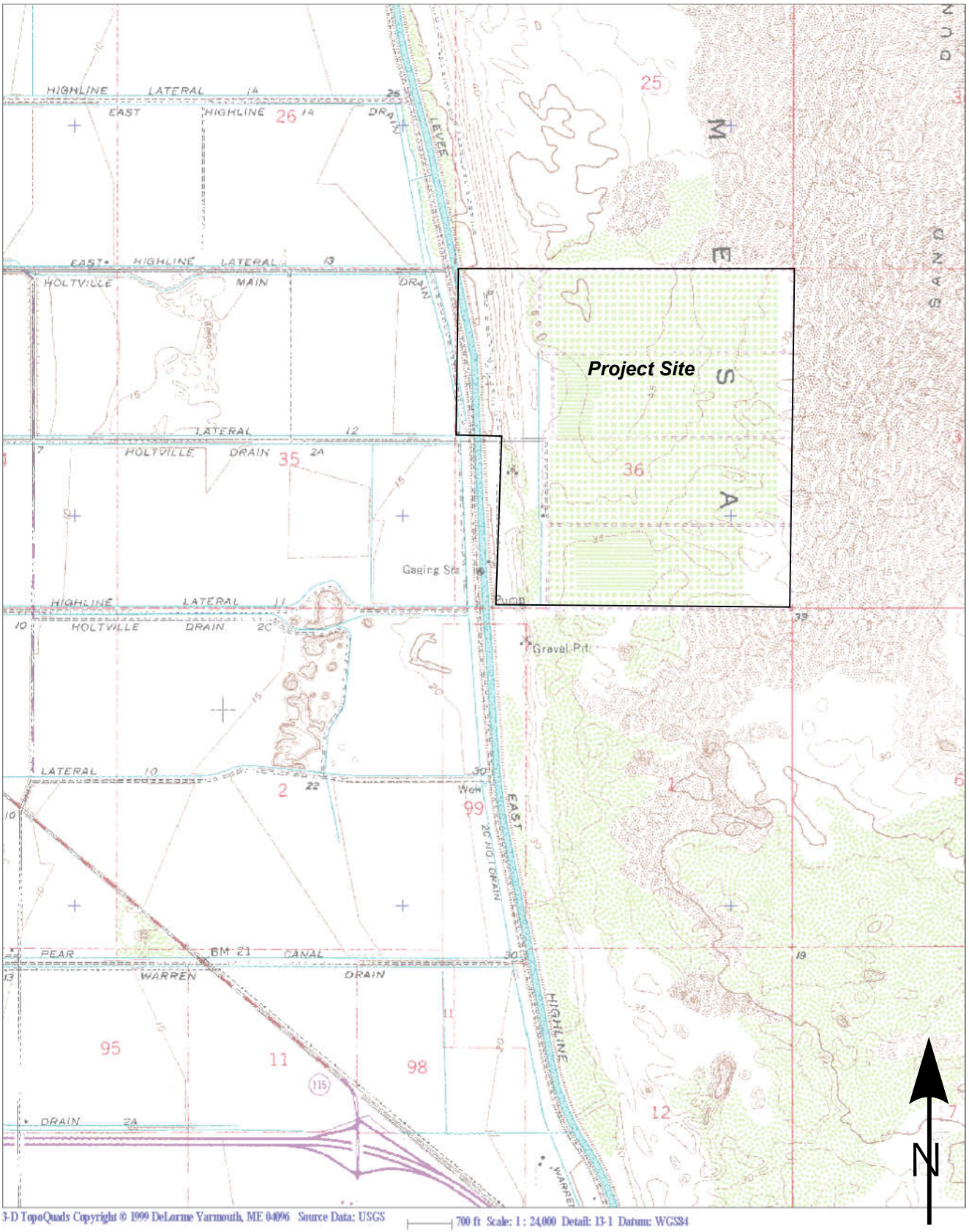
Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
121---------- Meloland	0-12	Fine sand-------	SM, SP-SM	A-2, A-3	0	95-100	90-100	75-100	5-30	---	NP
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-65	25-35	NP-10
	26-71	Clay, silty clay, silty clay loam.	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-40
122---------- Meloland	0-12	Very fine sandy loam.	ML	A-4	0	95-100	95-100	95-100	55-85	25-35	NP-10
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-70	25-35	NP-10
	26-71	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-40
123*: Meloland----------	0-12	Loam----------	ML	A-4	0	95-100	95-100	95-100	55-85	25-35	NP-10
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-70	25-35	NP-10
	26-38	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-40
	38-60	Stratified silt loam to loamy fine sand.	SM, ML	A-4	0	100	100	75-100	35-55	25-35	NP-10
Holtville---------	0-12	Loam----------	ML	A-4	0	100	100	85-100	55-95	25-35	NP-10
	12-24	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-36	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	55-85	25-35	NP-10
	36-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP
124, 125---------- Niland	0-23	Gravelly sand---	SM, SP-SM	A-2, A-3	0	90-100	70-95	50-65	5-25	---	NP
	23-60	Silty clay, clay, clay loam.	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
126---------- Niland	0-23	Fine sand-------	SM, SP-SM	A-2, A-3	0	90-100	90-100	50-65	5-25	---	NP
	23-60	Silty clay------	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
127---------- Niland	0-23	Loamy fine sand	SM	A-2	0	90-100	90-100	50-65	15-30	---	NP
	23-60	Silty clay------	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
128*: Niland----------	0-23	Gravelly sand---	SM, SP-SM	A-2, A-3	0	90-100	70-95	50-65	5-25	---	NP
	23-60	Silty clay, clay, clay loam.	CL, CH	A-7	0	100	100	85-100	80-100	40-65	20-40
Imperial----------	0-12	Silty clay------	CH	A-7	0	100	100	100	85-95	50-70	25-45
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
129*: Pits											
130, 131---------- Rositas	0-27	Sand----------	SP-SM	A-3, A-1, A-2	0	100	80-100	40-70	5-15	---	NP
	27-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
132, 133, 134, 135-Rositas	0-9	Fine sand-------	SM	A-3, A-2	0	100	80-100	50-80	10-25	---	NP
	9-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
136----------	0-4	Loamy fine sand	SM	A-1, A-2	0	100	80-100	40-85	10-35	---	NP
Rositas	4-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
137----------	0-12	Silt loam-------	ML	A-4	0	100	100	90-100	70-90	20-30	NP-5
Rositas	12-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
138*:											
Rositas----------	0-4	Loamy fine sand	SM	A-1, A-2	0	100	80-100	40-85	10-35	---	NP
	4-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
Superstition------	0-6	Loamy fine sand	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
139----------	0-6	Loamy fine sand	SM	A-2	0	100	95-100	70-85	15-25	---	NP
Superstition	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
140*:											
Torriorthents											
Rock outcrop											
141*:											
Torriorthents											
Orthids											
142----------	0-10	Loamy very fine sand.	SM, ML	A-4	0	100	100	85-95	40-65	15-25	NP-5
Vint	10-60	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
143----------	0-12	Fine sandy loam	ML, CL-ML, SM, SM-SC	A-4	0	100	100	75-85	45-55	15-25	NP-5
Vint	12-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
144*:											
Vint----------	0-10	Very fine sandy loam.	SM, ML	A-4	0	100	100	85-95	40-65	15-25	NP-5
	10-40	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
	40-60	Silty clay------	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
Indio----------	0-12	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-40	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	40-72	Silty clay------	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35

* See description of the map unit for composition and behavior characteristics of the map unit.



LANDMARK
Geo-Engineers and Geologists

Project No.: LE20189

Topographic Map

Plate A-4

APPENDIX B

CLIENT: APEX
PROJECT: Viking Solar

CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

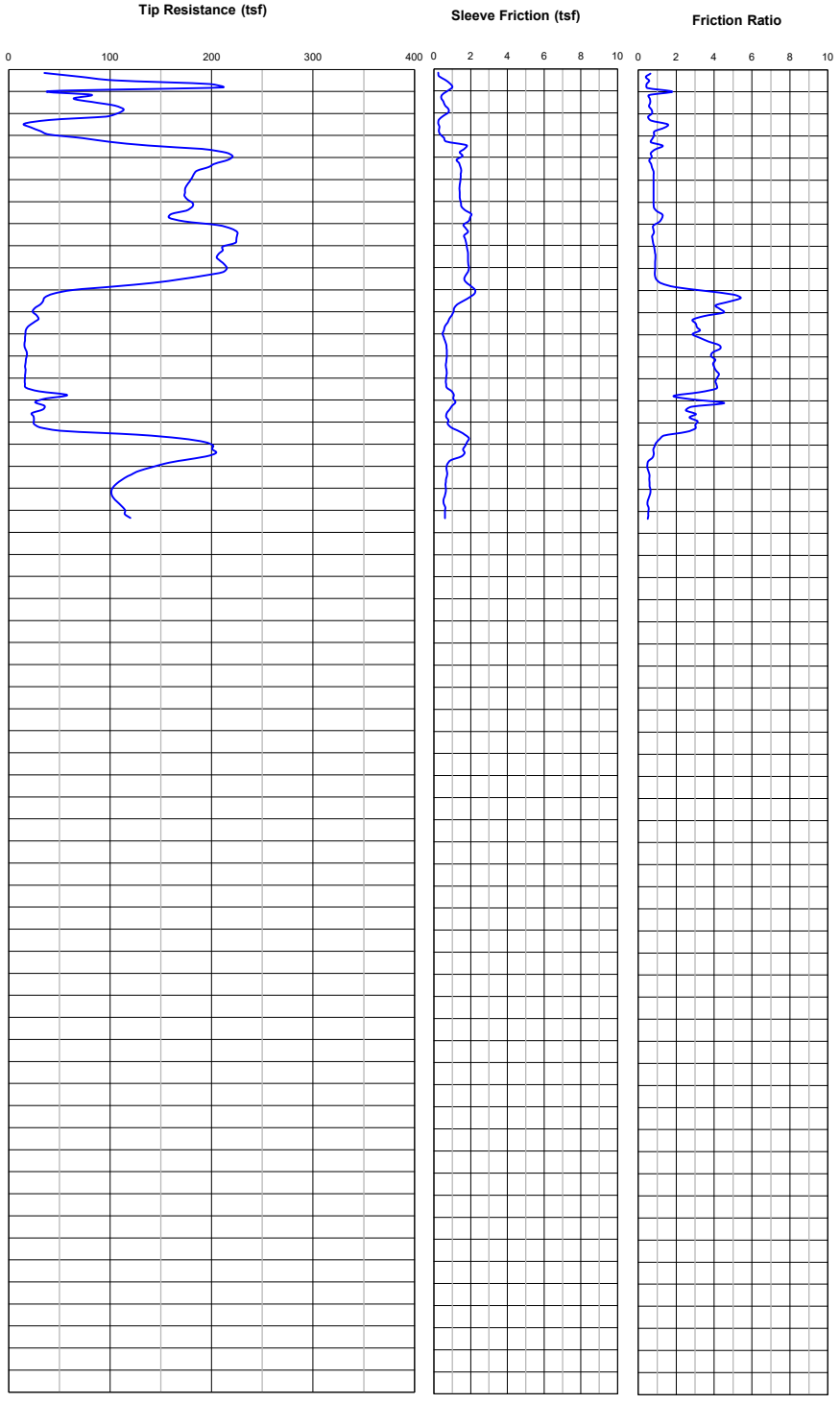
LOCATION: See Site and Boring Location Plan

DATE: 11/24/2020

CONE SOUNDING DATA CPT-1

DEPTH	INTERPRETED SOIL PROFILE From Robertson and Campanella (1989		
	GROUND ELEVATION +/-		
	Sand	SP	very dense
	Sand to Silty Sand	SP/SM	very dense
	Silty Sand to Sandy Silt	SM/ML	dense
	Sand	SP	very dense
5	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
10	Sand to Silty Sand	SP/SM	very dense
	Silty Clay to Clay	CL	very stiff
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Silty Clay to Clay	CL	stiff
	Silty Clay to Clay	" "	stiff
15	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Sand to Silty Sand	SP/SM	dense
	Sand	SP	very dense
	Sand	" "	dense
20	Sand	" "	dense
	Sand	" "	dense

END OF SOUNDING AT 20 ft.



Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-1

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/24/2020

CONE SOUNDING: CPT-1

Est. GWT (ft): 8

Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	69.95	0.54	Sand to Silty Sand	SP/SM	very dense	115	13	132.2	15	124	45		
0.30	1.0	150.14	0.90	Sand	SP	very dense	110	23	283.8	10	130	46		
0.45	1.5	75.85	0.60	Sand to Silty Sand	SP/SM	very dense	115	14	143.4	15	103	42		
0.60	2.0	108.74	0.66	Sand	SP	very dense	110	17	205.6	10	108	43		
0.75	2.5	50.50	0.91	Silty Sand to Sandy Silt	SM/ML	dense	115	11	95.5	25	82	39		
0.93	3.0	30.78	1.02	Silty Sand to Sandy Silt	SM/ML	medium dense	115	7	58.2	35	64	37		
1.08	3.5	103.27	0.90	Sand to Silty Sand	SP/SM	very dense	115	19	195.2	15	98	42		
1.23	4.0	208.42	0.75	Sand	SP	very dense	110	32	394.0	5	116	44		
1.38	4.5	205.48	0.66	Sand	SP	very dense	110	32	388.4	5	114	44		
1.53	5.0	182.80	0.80	Sand	SP	very dense	110	28	343.6	5	109	43		
1.68	5.5	175.34	0.80	Sand	SP	very dense	110	27	313.9	5	106	43		
1.83	6.0	177.06	0.81	Sand	SP	very dense	110	27	303.1	5	105	43		
1.98	6.5	172.01	1.02	Sand	SP	very dense	110	26	282.7	10	103	42		
2.13	7.0	179.07	1.04	Sand	SP	very dense	110	28	283.3	10	103	42		
2.28	7.5	223.08	0.78	Sand	SP	very dense	110	34	340.8	5	109	43		
2.45	8.0	219.48	0.79	Sand	SP	very dense	110	34	324.5	5	107	43		
2.60	8.5	207.62	0.89	Sand	SP	very dense	110	32	302.8	5	105	43		
2.75	9.0	212.21	0.88	Sand	SP	very dense	110	33	305.4	5	105	43		
2.90	9.5	191.33	0.91	Sand	SP	very dense	110	29	271.8	5	102	42		
3.05	10.0	103.09	2.24	Silty Sand to Sandy Silt	SM/ML	dense	115	23	144.6	30	83	40		
3.20	10.5	37.96	5.07	Clay	CL/CH	hard	125	30		65			2.20	>10
3.35	11.0	26.86	4.29	Silty Clay to Clay	CL	very stiff	125	15		75			1.55	>10
3.50	11.5	27.16	3.12	Clayey Silt to Silty Clay	ML/CL	very stiff	120	11		65			1.57	>10
3.65	12.0	17.67	3.07	Clayey Silt to Silty Clay	ML/CL	very stiff	120	7		80			1.01	>10
3.80	12.5	15.92	3.74	Silty Clay to Clay	CL	stiff	125	9		90			0.90	>10
3.95	13.0	17.20	4.03	Silty Clay to Clay	CL	stiff	125	10		90			0.98	>10
4.13	13.5	16.63	4.00	Silty Clay to Clay	CL	stiff	125	10		90			0.94	>10
4.28	14.0	16.34	4.17	Clay	CL/CH	stiff	125	13		95			0.93	>10
4.43	14.5	16.26	4.10	Silty Clay to Clay	CL	stiff	125	9		95			0.92	>10
4.58	15.0	41.64	2.64	Sandy Silt to Clayey Silt	ML	medium dense	115	12	50.9	55	53	35		
4.73	15.5	31.57	3.28	Clayey Silt to Silty Clay	ML/CL	very stiff	120	13		65			1.82	>10
4.88	16.0	24.31	2.97	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		75			1.39	>10
5.03	16.5	70.95	2.29	Silty Sand to Sandy Silt	SM/ML	medium dense	115	16	84.0	40	67	37		
5.18	17.0	187.99	0.97	Sand	SP	very dense	110	29	220.6	10	96	41		
5.33	17.5	199.75	0.79	Sand	SP	very dense	110	31	232.3	10	97	42		
5.48	18.0	155.87	0.50	Sand	SP	dense	110	24	179.8	5	90	41		
5.65	18.5	121.10	0.57	Sand	SP	dense	110	19	138.5	10	82	39		
5.80	19.0	105.12	0.61	Sand	SP	dense	110	16	119.3	15	78	39		
5.95	19.5	102.69	0.56	Sand	SP	dense	110	16	115.6	15	77	39		
6.10	20.0	111.89	0.52	Sand	SP	dense	110	17	124.9	10	79	39		
6.25	20.5	117.20	0.51	Sand	SP	dense	110	18	129.8	10	80	39		

CLIENT: APEX
PROJECT: Viking Solar

CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

LOCATION: See Site and Boring Location Plan

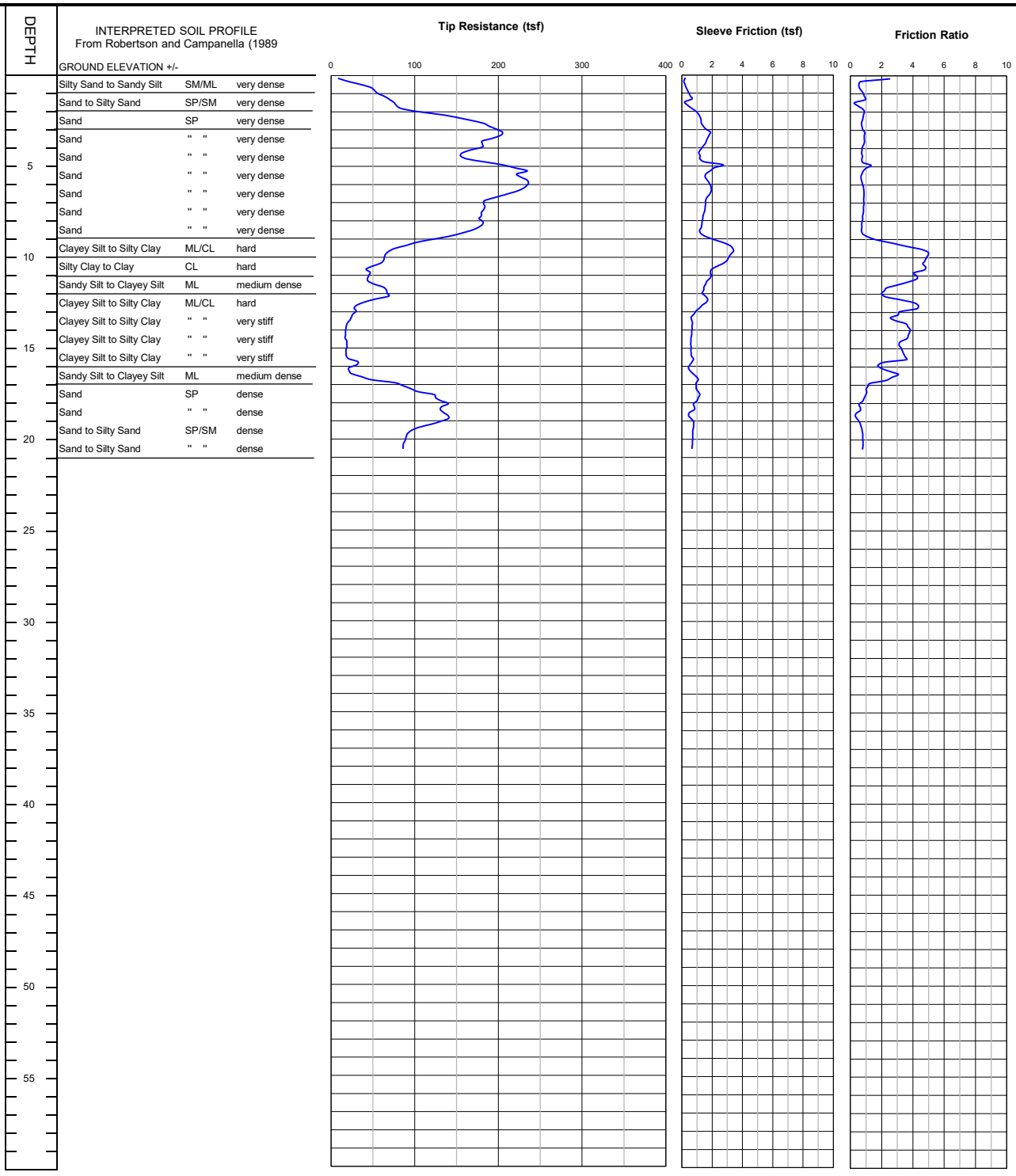
DATE: 11/24/2020

CONE SOUNDING DATA CPT-2

INTERPRETED SOIL PROFILE
From Robertson and Campanella (1989

GROUND ELEVATION +/-

Silty Sand to Sandy Silt	SM/ML	very dense
Sand to Silty Sand	SP/SM	very dense
Sand	SP	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Clayey Silt to Silty Clay	ML/CL	hard
Silty Clay to Clay	CL	hard
Sandy Silt to Clayey Silt	ML	medium dense
Clayey Silt to Silty Clay	ML/CL	hard
Clayey Silt to Silty Clay	" "	very stiff
Clayey Silt to Silty Clay	" "	very stiff
Clayey Silt to Silty Clay	" "	very stiff
Sandy Silt to Clayey Silt	ML	medium dense
Sand	SP	dense
Sand	" "	dense
Sand to Silty Sand	SP/SM	dense
Sand to Silty Sand	" "	dense



END OF SOUNDING AT 20 ft.

Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-2

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/24/2020

CONE SOUNDING: CPT-2

Est. GWT (ft): 8

Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	21.52	1.23	Sandy Silt to Clayey Silt	ML	dense	115	6	40.7	45	89	40		
0.30	1.0	51.67	0.70	Sand to Silty Sand	SP/SM	very dense	115	9	97.7	20	99	42		
0.45	1.5	69.50	0.70	Sand to Silty Sand	SP/SM	very dense	115	13	131.4	15	100	42		
0.60	2.0	87.38	0.70	Sand to Silty Sand	SP/SM	very dense	115	16	165.2	15	102	42		
0.75	2.5	147.99	0.80	Sand	SP	very dense	110	23	279.8	10	113	44		
0.93	3.0	189.52	0.74	Sand	SP	very dense	110	29	358.3	5	118	45		
1.08	3.5	200.26	0.90	Sand	SP	very dense	110	31	378.6	5	117	44		
1.23	4.0	180.81	0.83	Sand	SP	very dense	110	28	341.8	5	112	44		
1.38	4.5	159.15	0.74	Sand	SP	very dense	110	24	300.9	5	107	43		
1.53	5.0	184.35	0.95	Sand	SP	very dense	110	28	347.3	10	109	43		
1.68	5.5	225.59	0.80	Sand	SP	very dense	110	35	404.7	5	114	44		
1.83	6.0	234.41	0.76	Sand	SP	very dense	110	36	402.1	5	114	44		
1.98	6.5	218.53	0.86	Sand	SP	very dense	110	34	359.8	5	110	43		
2.13	7.0	186.68	0.85	Sand	SP	very dense	110	29	295.9	5	105	43		
2.28	7.5	181.85	0.83	Sand	SP	very dense	110	28	278.2	5	103	42		
2.45	8.0	179.37	0.77	Sand	SP	very dense	110	28	265.5	5	101	42		
2.60	8.5	174.19	0.72	Sand	SP	very dense	110	27	254.4	5	100	42		
2.75	9.0	137.92	1.22	Sand to Silty Sand	SP/SM	very dense	115	25	198.6	15	93	41		
2.90	9.5	88.96	3.53	Sandy Silt to Clayey Silt	ML	dense	115	25	126.3	40	79	39		
3.05	10.0	65.77	4.92	Overconsolidated Soil	??	dense	120	66	92.0	55	70	38		
3.20	10.5	56.76	4.73	Silty Clay to Clay	CL	hard	125	32		55			3.31	>10
3.35	11.0	44.55	4.34	Silty Clay to Clay	CL	hard	125	25		60			2.59	>10
3.50	11.5	46.55	3.66	Clayey Silt to Silty Clay	ML/CL	hard	120	19		55			2.71	>10
3.65	12.0	65.28	2.16	Silty Sand to Sandy Silt	SM/ML	medium dense	115	15	86.2	35	68	38		
3.80	12.5	53.77	3.19	Sandy Silt to Clayey Silt	ML	medium dense	115	15	70.2	50	62	37		
3.95	13.0	29.43	3.91	Clayey Silt to Silty Clay	ML/CL	very stiff	120	12		70			1.70	>10
4.13	13.5	24.37	2.83	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		70			1.40	>10
4.28	14.0	18.52	3.69	Silty Clay to Clay	CL	very stiff	125	11		85			1.05	>10
4.43	14.5	17.11	3.69	Silty Clay to Clay	CL	stiff	125	10		90			0.97	>10
4.58	15.0	18.89	3.17	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		80			1.07	>10
4.73	15.5	17.98	3.40	Clayey Silt to Silty Clay	ML/CL	very stiff	120	7		85			1.02	>10
4.88	16.0	26.41	2.36	Sandy Silt to Clayey Silt	ML	loose	115	8	31.7	65	39	33		
5.03	16.5	27.51	2.76	Clayey Silt to Silty Clay	ML/CL	very stiff	120	11		70			1.58	>10
5.18	17.0	70.05	1.53	Silty Sand to Sandy Silt	SM/ML	medium dense	115	16	82.3	30	67	37		
5.33	17.5	107.47	1.00	Sand to Silty Sand	SP/SM	dense	115	20	125.1	20	79	39		
5.48	18.0	131.80	0.73	Sand	SP	dense	110	20	152.0	10	85	40		
5.65	18.5	132.37	0.54	Sand	SP	dense	110	20	151.4	10	85	40		
5.80	19.0	136.79	0.45	Sand	SP	dense	110	21	155.2	10	85	40		
5.95	19.5	106.69	0.71	Sand	SP	dense	110	16	120.1	15	78	39		
6.10	20.0	90.19	0.79	Sand to Silty Sand	SP/SM	dense	115	16	100.7	20	73	38		
6.25	20.5	86.49	0.79	Sand to Silty Sand	SP/SM	dense	115	16	95.7	20	71	38		

CLIENT: APEX
PROJECT: Viking Solar

CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

LOCATION: See Site and Boring Location Plan

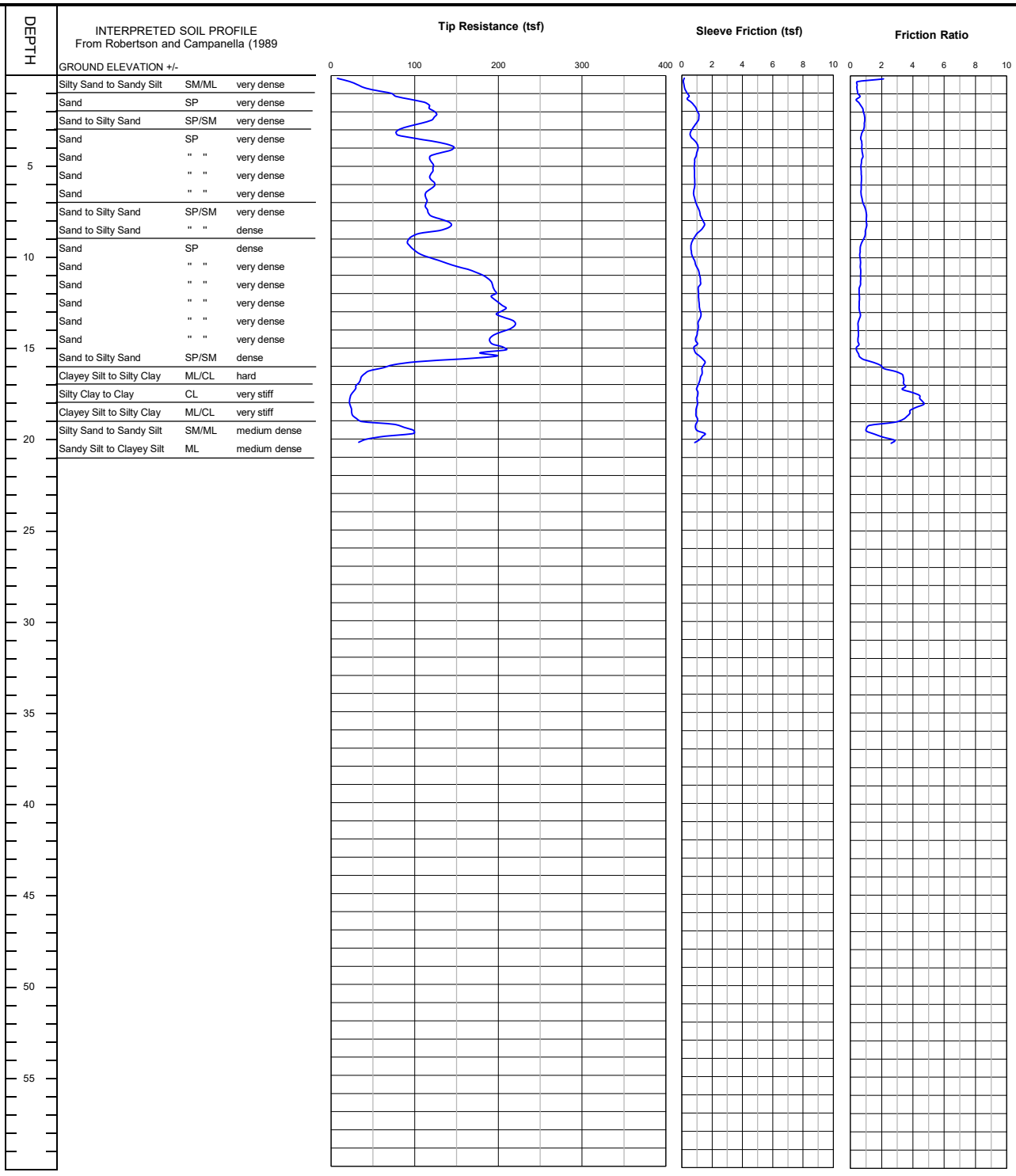
DATE: 11/24/2020

CONE SOUNDING DATA CPT-3

INTERPRETED SOIL PROFILE
From Robertson and Campanella (1989

GROUND ELEVATION +/-

Silty Sand to Sandy Silt	SM/ML	very dense
Sand	SP	very dense
Sand to Silty Sand	SP/SM	very dense
Sand	SP	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand to Silty Sand	SP/SM	very dense
Sand to Silty Sand	" "	dense
Sand	SP	dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand to Silty Sand	SP/SM	dense
Clayey Silt to Silty Clay	ML/CL	hard
Silty Clay to Clay	CL	very stiff
Clayey Silt to Silty Clay	ML/CL	very stiff
Silty Sand to Sandy Silt	SM/ML	medium dense
Sandy Silt to Clayey Silt	ML	medium dense



END OF SOUNDING AT 20 ft.

Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-3

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/24/2020

CONE SOUNDING: CPT-3

Est. GWT (ft): 8

Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	20.14	0.99	Sandy Silt to Clayey Silt	ML	dense	115	6	38.1	45	87	40		
0.30	1.0	54.68	0.44	Sand to Silty Sand	SP/SM	very dense	115	10	103.4	15	100	42		
0.45	1.5	94.77	0.51	Sand	SP	very dense	110	15	179.2	10	109	43		
0.60	2.0	119.28	0.76	Sand	SP	very dense	110	18	225.5	10	111	44		
0.75	2.5	123.16	0.90	Sand to Silty Sand	SP/SM	very dense	115	22	232.8	10	108	43		
0.93	3.0	94.44	0.88	Sand to Silty Sand	SP/SM	very dense	115	17	178.5	15	97	42		
1.08	3.5	85.71	0.69	Sand to Silty Sand	SP/SM	very dense	115	16	162.0	15	92	41		
1.23	4.0	134.82	0.73	Sand	SP	very dense	110	21	254.9	10	103	42		
1.38	4.5	130.45	0.77	Sand	SP	very dense	110	20	246.6	10	101	42		
1.53	5.0	120.07	0.70	Sand	SP	very dense	110	18	225.7	10	97	42		
1.68	5.5	120.21	0.69	Sand	SP	very dense	110	18	215.2	10	95	41		
1.83	6.0	122.24	0.70	Sand	SP	very dense	110	19	209.3	10	94	41		
1.98	6.5	115.18	0.69	Sand	SP	very dense	110	18	189.3	10	91	41		
2.13	7.0	113.80	0.78	Sand to Silty Sand	SP/SM	dense	115	21	179.9	10	90	41		
2.28	7.5	114.73	0.97	Sand to Silty Sand	SP/SM	dense	115	21	174.9	15	89	40		
2.45	8.0	129.08	1.02	Sand to Silty Sand	SP/SM	very dense	115	23	190.1	15	91	41		
2.60	8.5	137.56	1.00	Sand to Silty Sand	SP/SM	very dense	115	25	199.6	10	93	41		
2.75	9.0	98.03	0.89	Sand to Silty Sand	SP/SM	dense	115	18	140.2	15	82	40		
2.90	9.5	93.90	0.66	Sand to Silty Sand	SP/SM	dense	115	17	132.5	10	81	39		
3.05	10.0	108.64	0.61	Sand	SP	dense	110	17	151.3	10	85	40		
3.20	10.5	139.07	0.64	Sand	SP	very dense	110	21	191.3	5	92	41		
3.35	11.0	172.64	0.65	Sand	SP	very dense	110	27	234.7	5	98	42		
3.50	11.5	190.40	0.64	Sand	SP	very dense	110	29	255.9	5	100	42		
3.65	12.0	195.49	0.56	Sand	SP	very dense	110	30	259.8	5	101	42		
3.80	12.5	195.23	0.57	Sand	SP	very dense	110	30	256.6	5	100	42		
3.95	13.0	205.80	0.57	Sand	SP	very dense	110	32	267.6	5	102	42		
4.13	13.5	206.35	0.59	Sand	SP	very dense	110	32	265.5	5	101	42		
4.28	14.0	217.50	0.49	Sand	SP	very dense	110	33	277.0	0	103	42		
4.43	14.5	195.97	0.50	Sand	SP	very dense	110	30	247.1	5	99	42		
4.58	15.0	195.59	0.47	Sand	SP	very dense	110	30	244.1	5	99	42		
4.73	15.5	195.20	0.49	Sand	SP	very dense	110	30	241.3	5	98	42		
4.88	16.0	99.31	1.61	Silty Sand to Sandy Silt	SM/ML	dense	115	22	121.5	25	78	39		
5.03	16.5	40.78	3.20	Clayey Silt to Silty Clay	ML/CL	hard	120	16		60			2.36	>10
5.18	17.0	32.72	3.45	Clayey Silt to Silty Clay	ML/CL	very stiff	120	13		70			1.89	>10
5.33	17.5	26.64	3.89	Silty Clay to Clay	CL	very stiff	125	15		80			1.53	>10
5.48	18.0	22.30	4.58	Clay	CL/CH	very stiff	125	18		90			1.27	>10
5.65	18.5	24.20	3.94	Silty Clay to Clay	CL	very stiff	125	14		85			1.38	>10
5.80	19.0	30.91	3.27	Clayey Silt to Silty Clay	ML/CL	very stiff	120	12		70			1.78	>10
5.95	19.5	87.06	1.09	Sand to Silty Sand	SP/SM	dense	115	16	98.8	25	72	38		
6.10	20.0	68.49	2.16	Silty Sand to Sandy Silt	SM/ML	medium dense	115	15	77.0	40	65	37		
6.25	20.5	33.00	2.60	Sandy Silt to Clayey Silt	ML	medium dense	115	9	36.8	65	43	34		

CLIENT: APEX
PROJECT: Viking Solar

CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

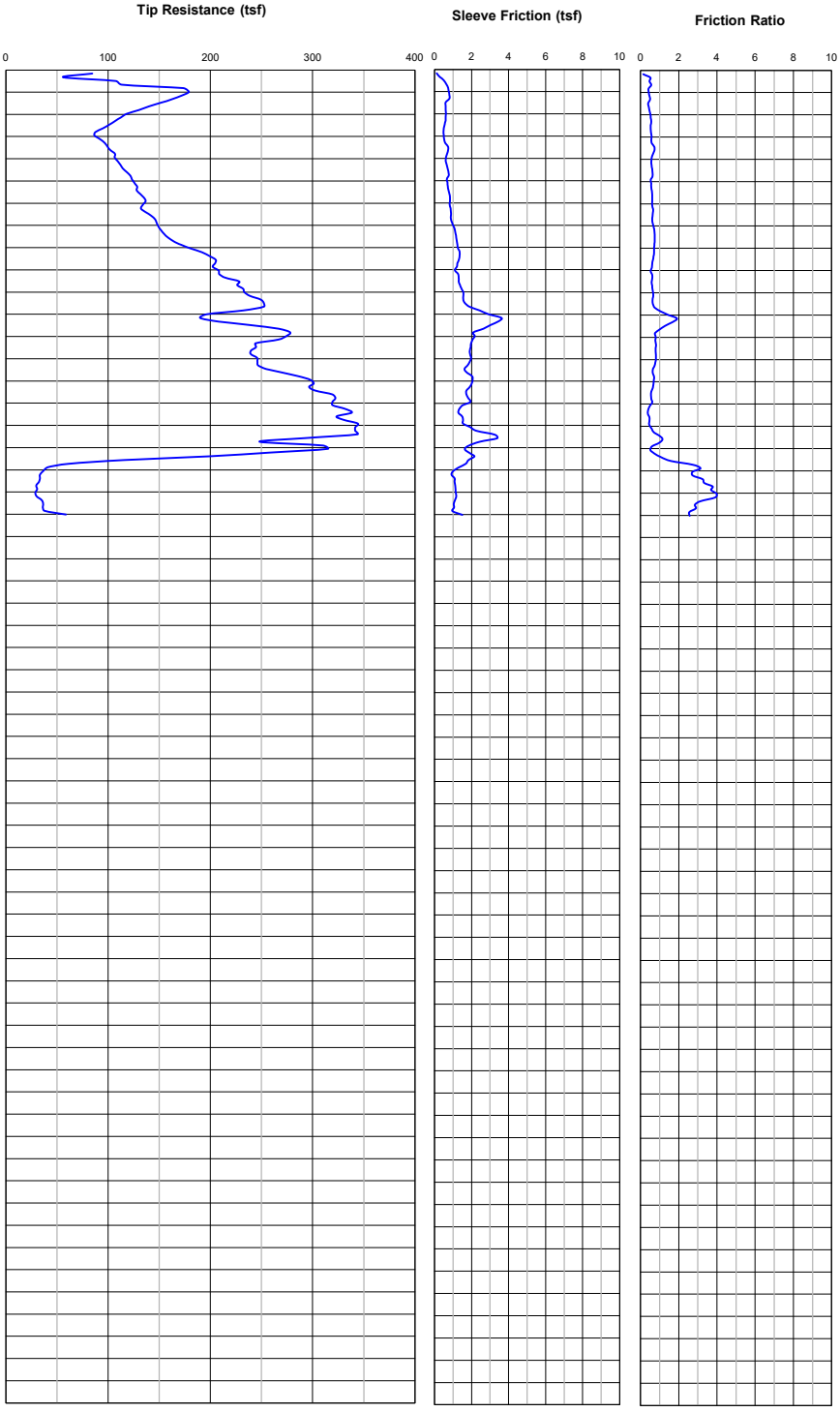
LOCATION: See Site and Boring Location Plan

DATE: 11/24/2020

CONE SOUNDING DATA CPT-4

DEPTH	INTERPRETED SOIL PROFILE From Robertson and Campanella (1989		
	GROUND ELEVATION +/-		
	Sand	SP	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
5	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
10	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
15	Gravelly Sand to Sand	SW	very dense
	Gravelly Sand to Sand	" "	very dense
	Sand	SP	very dense
	Silty Sand to Sandy Silt	SM/ML	dense
	Clayey Silt to Silty Clay	ML/CL	very stiff
20	Sandy Silt to Clayey Silt	ML	medium dense

END OF SOUNDING AT 20 ft.



Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-4

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/24/2020

CONE SOUNDING: CPT-4

Est. GWT (ft): 8 Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	82.59	0.37	Sand to Silty Sand	SP/SM	very dense	115	15	156.1	10	129	46		
0.30	1.0	155.23	0.47	Sand	SP	very dense	110	24	293.4	5	131	46		
0.45	1.5	162.02	0.45	Sand	SP	very dense	110	25	306.3	5	125	46		
0.60	2.0	129.37	0.47	Sand	SP	very dense	110	20	244.5	5	114	44		
0.75	2.5	106.94	0.54	Sand	SP	very dense	110	16	202.2	10	104	43		
0.93	3.0	89.73	0.55	Sand to Silty Sand	SP/SM	very dense	115	16	169.6	10	96	41		
1.08	3.5	96.03	0.62	Sand to Silty Sand	SP/SM	very dense	115	17	181.5	10	96	41		
1.23	4.0	105.12	0.65	Sand	SP	very dense	110	16	198.7	10	96	41		
1.38	4.5	111.87	0.58	Sand	SP	very dense	110	17	211.5	10	96	41		
1.53	5.0	121.05	0.60	Sand	SP	very dense	110	19	228.6	5	97	42		
1.68	5.5	128.32	0.58	Sand	SP	very dense	110	20	230.7	5	97	42		
1.83	6.0	135.11	0.61	Sand	SP	very dense	110	21	232.2	5	97	42		
1.98	6.5	137.06	0.64	Sand	SP	very dense	110	21	226.0	5	97	42		
2.13	7.0	147.57	0.65	Sand	SP	very dense	110	23	234.3	5	98	42		
2.28	7.5	155.11	0.73	Sand	SP	very dense	110	24	237.7	5	98	42		
2.45	8.0	172.08	0.72	Sand	SP	very dense	110	26	255.1	5	100	42		
2.60	8.5	198.62	0.68	Sand	SP	very dense	110	31	290.5	5	104	43		
2.75	9.0	204.99	0.58	Sand	SP	very dense	110	32	295.8	5	105	43		
2.90	9.5	217.05	0.60	Sand	SP	very dense	110	33	309.2	5	106	43		
3.05	10.0	230.40	0.63	Sand	SP	very dense	110	35	324.1	5	107	43		
3.20	10.5	246.78	0.64	Sand	SP	very dense	110	38	342.9	0	109	43		
3.35	11.0	226.95	1.09	Sand	SP	very dense	110	35	311.6	10	106	43		
3.50	11.5	211.99	1.61	Sand to Silty Sand	SP/SM	very dense	115	39	287.5	15	104	43		
3.65	12.0	272.97	0.84	Sand	SP	very dense	110	42	365.8	5	111	44		
3.80	12.5	251.85	0.79	Sand	SP	very dense	110	39	333.7	5	108	43		
3.95	13.0	241.60	0.80	Sand	SP	very dense	110	37	316.6	5	107	43		
4.13	13.5	248.98	0.71	Sand	SP	very dense	110	38	322.8	5	107	43		
4.28	14.0	284.25	0.68	Sand	SP	very dense	110	44	364.7	5	111	43		
4.43	14.5	300.12	0.62	Gravelly Sand to Sand	SW	very dense	115	40	381.0	0	112	44		
4.58	15.0	320.31	0.57	Gravelly Sand to Sand	SW	very dense	115	43	402.1	0	114	44		
4.73	15.5	329.90	0.42	Gravelly Sand to Sand	SW	very dense	115	44	409.7	0	114	44		
4.88	16.0	334.78	0.48	Gravelly Sand to Sand	SW	very dense	115	45	411.4	0	114	44		
5.03	16.5	326.17	0.92	Sand	SP	very dense	110	50	396.8	5	113	44		
5.18	17.0	290.81	0.70	Sand	SP	very dense	110	45	350.6	5	110	43		
5.33	17.5	190.73	1.13	Sand	SP	very dense	110	29	227.8	15	97	42		
5.48	18.0	46.65	2.86	Sandy Silt to Clayey Silt	ML	medium dense	115	13	55.2	55	55	36		
5.65	18.5	33.05	3.10	Clayey Silt to Silty Clay	ML/CL	very stiff	120	13		65			1.90	>10
5.80	19.0	29.73	3.82	Clayey Silt to Silty Clay	ML/CL	very stiff	120	12		75			1.71	>10
5.95	19.5	33.81	3.29	Clayey Silt to Silty Clay	ML/CL	very stiff	120	14		70			1.95	>10
6.10	20.0	44.27	2.67	Sandy Silt to Clayey Silt	ML	medium dense	115	13	50.3	55	52	35		
6.25	20.5	#DIV/0!	#DIV/0!	#REF!	#REF!	#REF!	#REF!	#DIV/0!	#REF!	#DIV/0!	#REF!	#REF!	#REF!	#REF!

CLIENT: APEX
PROJECT: Viking Solar

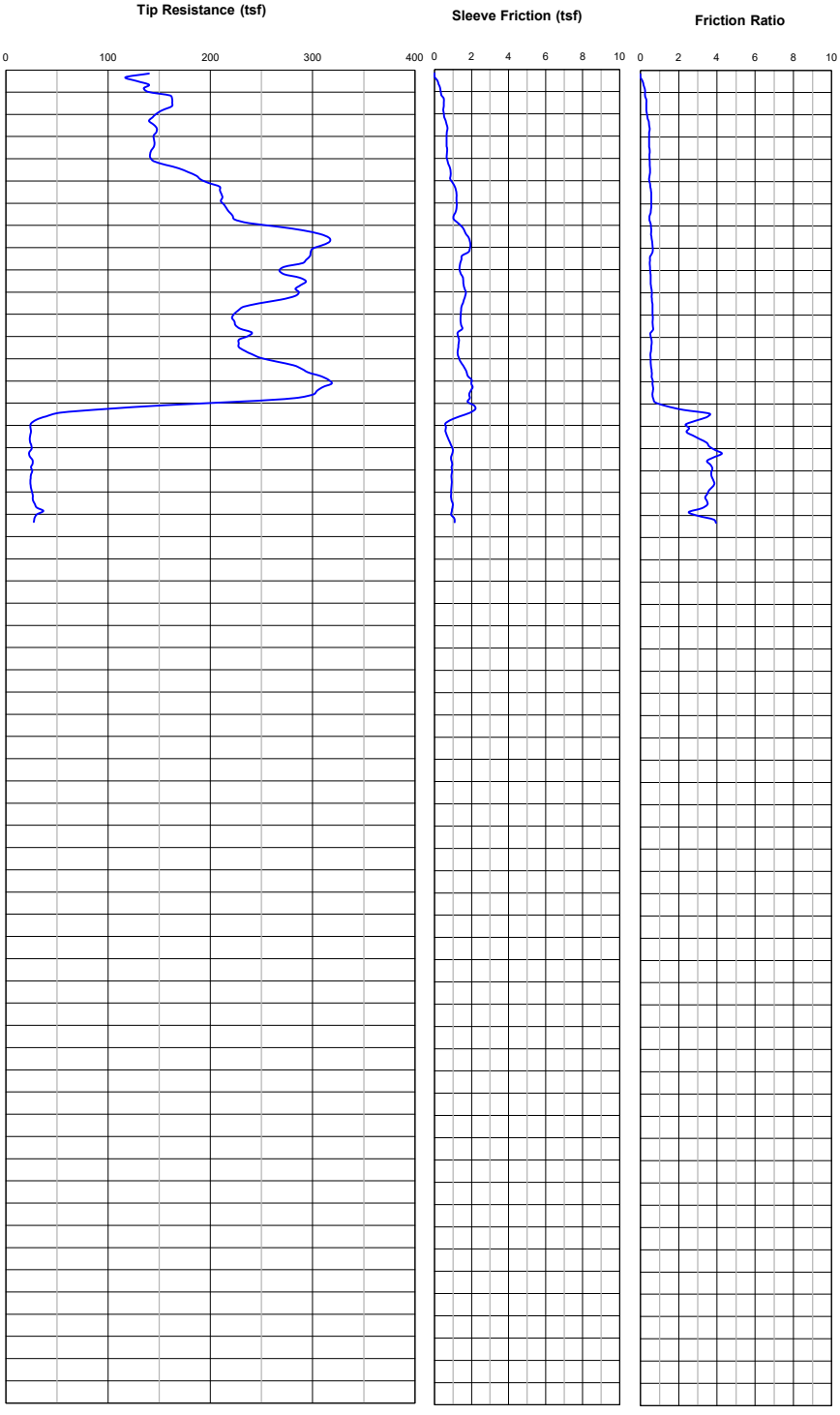
CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

LOCATION: See Site and Boring Location Plan

DATE: 11/25/2020

CONE SOUNDING DATA CPT-5

DEPTH	INTERPRETED SOIL PROFILE From Robertson and Campanella (1989		
	GROUND ELEVATION +/-		
	Sand	SP	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
5	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Gravelly Sand to Sand	SW	very dense
	Gravelly Sand to Sand	" "	very dense
10	Gravelly Sand to Sand	" "	very dense
	Sand	SP	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Gravelly Sand to Sand	SW	very dense
15	Gravelly Sand to Sand	" "	very dense
	Sandy Silt to Clayey Silt	ML	medium dense
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
20	Clayey Silt to Silty Clay	" "	very stiff



END OF SOUNDING AT 20 ft.

Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-5

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/25/2020

CONE SOUNDING: CPT-5

Est. GWT (ft): 8

Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	128.19	0.04	Sand	SP	very dense	110	20	242.3	0	142	48		
0.30	1.0	137.91	0.21	Sand	SP	very dense	110	21	260.7	0	128	46		
0.45	1.5	161.98	0.28	Sand	SP	very dense	110	25	306.2	0	125	46		
0.60	2.0	154.15	0.32	Sand	SP	very dense	110	24	291.4	0	119	45		
0.75	2.5	142.65	0.41	Sand	SP	very dense	110	22	269.7	5	113	44		
0.93	3.0	146.45	0.46	Sand	SP	very dense	110	23	276.8	5	111	44		
1.08	3.5	144.91	0.45	Sand	SP	very dense	110	22	273.9	5	108	43		
1.23	4.0	141.50	0.47	Sand	SP	very dense	110	22	267.5	5	105	43		
1.38	4.5	156.62	0.49	Sand	SP	very dense	110	24	296.1	5	106	43		
1.53	5.0	184.98	0.47	Sand	SP	very dense	110	28	349.7	0	110	43		
1.68	5.5	206.79	0.53	Sand	SP	very dense	110	32	374.1	0	111	44		
1.83	6.0	211.87	0.56	Sand	SP	very dense	110	33	366.3	0	111	44		
1.98	6.5	218.66	0.51	Sand	SP	very dense	110	34	362.6	0	111	43		
2.13	7.0	242.87	0.51	Sand	SP	very dense	110	37	387.5	0	112	44		
2.28	7.5	304.33	0.56	Gravelly Sand to Sand	SW	very dense	115	41	468.2	0	118	45		
2.45	8.0	309.08	0.62	Gravelly Sand to Sand	SW	very dense	115	41	459.2	0	118	44		
2.60	8.5	296.36	0.54	Gravelly Sand to Sand	SW	very dense	115	40	433.7	0	116	44		
2.75	9.0	276.48	0.49	Gravelly Sand to Sand	SW	very dense	115	37	398.7	0	113	44		
2.90	9.5	284.21	0.53	Gravelly Sand to Sand	SW	very dense	115	38	404.1	0	114	44		
3.05	10.0	286.02	0.57	Gravelly Sand to Sand	SW	very dense	115	38	401.1	0	113	44		
3.20	10.5	266.42	0.60	Sand	SP	very dense	110	41	368.8	0	111	44		
3.35	11.0	227.46	0.63	Sand	SP	very dense	110	35	311.1	5	106	43		
3.50	11.5	223.08	0.64	Sand	SP	very dense	110	34	301.6	5	105	43		
3.65	12.0	235.39	0.57	Sand	SP	very dense	110	36	314.7	0	106	43		
3.80	12.5	227.80	0.57	Sand	SP	very dense	110	35	301.1	0	105	43		
3.95	13.0	240.99	0.53	Sand	SP	very dense	110	37	315.1	0	106	43		
4.13	13.5	278.48	0.55	Gravelly Sand to Sand	SW	very dense	115	37	360.1	0	110	43		
4.28	14.0	306.28	0.60	Gravelly Sand to Sand	SW	very dense	115	41	391.5	0	113	44		
4.43	14.5	310.92	0.64	Gravelly Sand to Sand	SW	very dense	115	41	393.0	0	113	44		
4.58	15.0	270.91	0.69	Sand	SP	very dense	110	42	338.9	5	109	43		
4.73	15.5	101.87	2.41	Silty Sand to Sandy Silt	SM/ML	dense	115	23	126.1	35	79	39		
4.88	16.0	29.41	2.81	Clayey Silt to Silty Clay	ML/CL	very stiff	120	12		65			1.69	>10
5.03	16.5	23.96	2.74	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		70			1.37	>10
5.18	17.0	24.53	3.66	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		80			1.40	>10
5.33	17.5	24.06	3.85	Silty Clay to Clay	CL	very stiff	125	14		80			1.38	>10
5.48	18.0	25.48	3.70	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		80			1.46	>10
5.65	18.5	24.27	3.78	Silty Clay to Clay	CL	very stiff	125	14		85			1.39	>10
5.80	19.0	24.94	3.62	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		80			1.42	>10
5.95	19.5	26.92	3.45	Clayey Silt to Silty Clay	ML/CL	very stiff	120	11		80			1.54	>10
6.10	20.0	32.37	2.90	Clayey Silt to Silty Clay	ML/CL	very stiff	120	13		70			1.86	>10
6.25	20.5	27.73	3.88	Silty Clay to Clay	CL	very stiff	125	16		80			1.59	>10

CLIENT: APEX
PROJECT: Viking Solar

CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

LOCATION: See Site and Boring Location Plan

DATE: 11/24/2020

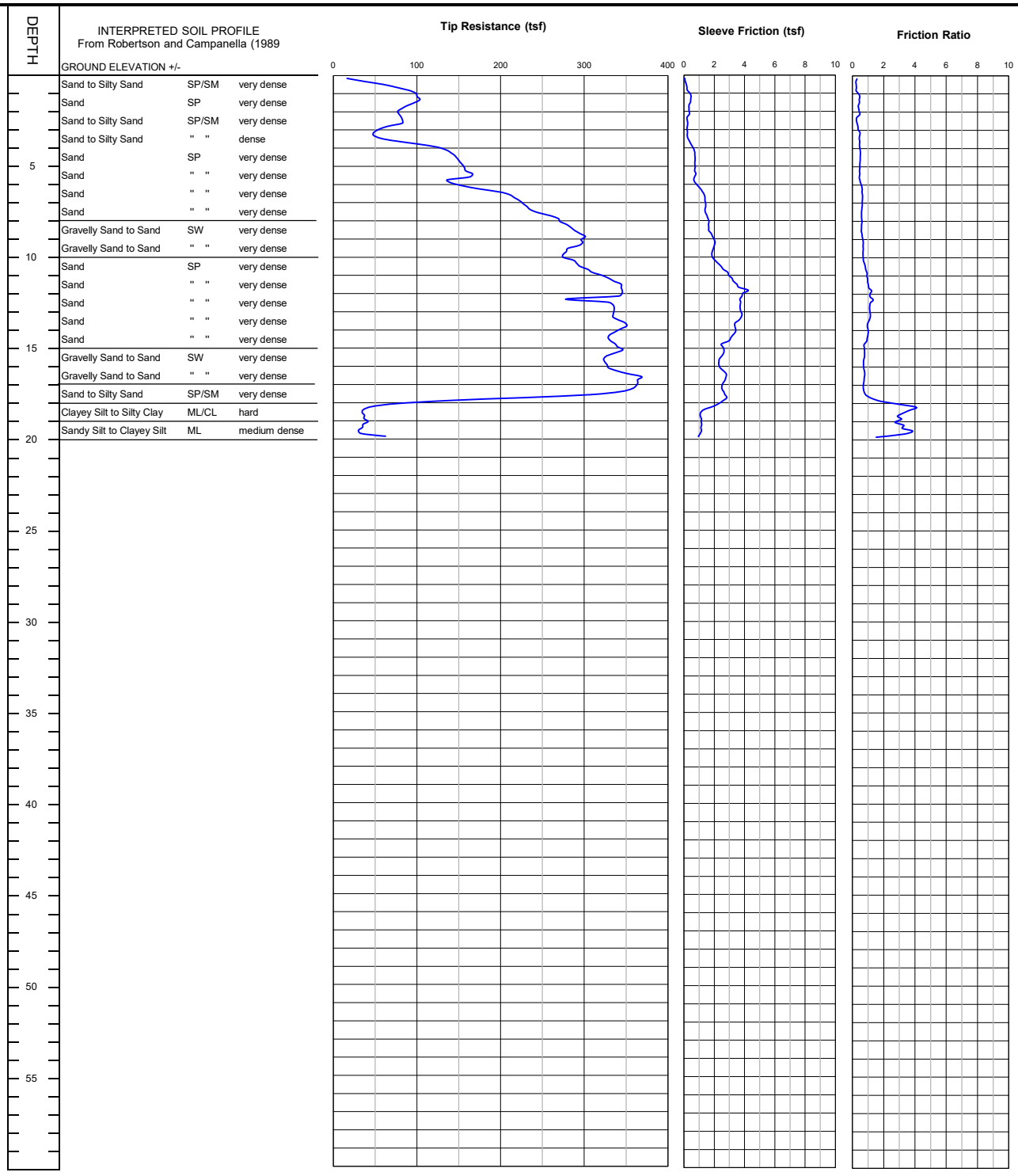
CONE SOUNDING DATA CPT-6

INTERPRETED SOIL PROFILE
From Robertson and Campanella (1989

GROUND ELEVATION +/-

Sand to Silty Sand	SP/SM	very dense
Sand	SP	very dense
Sand to Silty Sand	SP/SM	very dense
Sand to Silty Sand	" "	dense
Sand	SP	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Gravelly Sand to Sand	SW	very dense
Gravelly Sand to Sand	" "	very dense
Sand	SP	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Gravelly Sand to Sand	SW	very dense
Gravelly Sand to Sand	" "	very dense
Sand to Silty Sand	SP/SM	very dense
Clayey Silt to Silty Clay	ML/CL	hard
Sandy Silt to Clayey Silt	ML	medium dense

END OF SOUNDING AT 20 ft.



Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-6

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/24/2020

CONE SOUNDING: CPT-6

Est. GWT (ft): 8 Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	37.78	0.25	Sand to Silty Sand	SP/SM	very dense	115	7	71.4	15	106	43		
0.30	1.0	88.50	0.29	Sand	SP	very dense	110	14	167.3	5	115	44		
0.45	1.5	100.65	0.45	Sand	SP	very dense	110	15	190.3	5	111	44		
0.60	2.0	82.89	0.40	Sand to Silty Sand	SP/SM	very dense	115	15	156.7	10	100	42		
0.75	2.5	80.89	0.33	Sand	SP	very dense	110	12	152.9	5	96	41		
0.93	3.0	67.52	0.34	Sand to Silty Sand	SP/SM	dense	115	12	127.6	10	88	40		
1.08	3.5	50.96	0.46	Sand to Silty Sand	SP/SM	dense	115	9	96.3	15	77	39		
1.23	4.0	99.91	0.45	Sand	SP	very dense	110	15	188.9	5	95	41		
1.38	4.5	140.72	0.50	Sand	SP	very dense	110	22	266.0	5	103	42		
1.53	5.0	151.58	0.48	Sand	SP	very dense	110	23	285.6	5	103	42		
1.68	5.5	161.19	0.45	Sand	SP	very dense	110	25	289.1	5	104	43		
1.83	6.0	143.85	0.53	Sand	SP	very dense	110	22	246.7	5	99	42		
1.98	6.5	194.38	0.63	Sand	SP	very dense	110	30	320.0	5	107	43		
2.13	7.0	222.32	0.63	Sand	SP	very dense	110	34	352.4	5	110	43		
2.28	7.5	237.35	0.59	Sand	SP	very dense	110	37	363.2	0	111	43		
2.45	8.0	266.58	0.59	Sand	SP	very dense	110	41	394.7	0	113	44		
2.60	8.5	284.16	0.57	Gravelly Sand to Sand	SW	very dense	115	38	414.7	0	114	44		
2.75	9.0	297.39	0.63	Gravelly Sand to Sand	SW	very dense	115	40	427.7	0	115	44		
2.90	9.5	290.63	0.69	Sand	SP	very dense	110	45	412.4	0	114	44		
3.05	10.0	275.98	0.68	Sand	SP	very dense	110	42	386.7	0	112	44		
3.20	10.5	291.20	0.77	Sand	SP	very dense	110	45	403.1	5	114	44		
3.35	11.0	311.47	0.90	Sand	SP	very dense	110	48	426.0	5	115	44		
3.50	11.5	336.47	0.98	Sand	SP	very dense	110	52	454.9	5	117	44		
3.65	12.0	344.86	1.14	Sand	SP	very dense	110	53	461.0	5	118	44		
3.80	12.5	315.81	1.20	Sand	SP	very dense	110	49	417.5	5	115	44		
3.95	13.0	335.28	1.11	Sand	SP	very dense	110	52	438.4	5	116	44		
4.13	13.5	336.83	1.11	Sand	SP	very dense	110	52	435.8	5	116	44		
4.28	14.0	347.46	0.97	Sand	SP	very dense	110	53	444.9	5	117	44		
4.43	14.5	331.83	0.97	Sand	SP	very dense	110	51	420.5	5	115	44		
4.58	15.0	336.18	0.79	Sand	SP	very dense	110	52	421.8	5	115	44		
4.73	15.5	336.67	0.77	Sand	SP	very dense	110	52	418.3	5	115	44		
4.88	16.0	325.90	0.72	Gravelly Sand to Sand	SW	very dense	115	43	400.8	5	113	44		
5.03	16.5	353.03	0.77	Sand	SP	very dense	110	54	429.9	5	116	44		
5.18	17.0	363.27	0.72	Gravelly Sand to Sand	SW	very dense	115	48	438.1	0	116	44		
5.33	17.5	335.95	0.78	Sand	SP	very dense	110	52	401.3	5	114	44		
5.48	18.0	147.29	2.03	Silty Sand to Sandy Silt	SM/ML	dense	115	33	174.3	25	89	40		
5.65	18.5	38.82	3.64	Clayey Silt to Silty Clay	ML/CL	hard	120	16		65			2.24	>10
5.80	19.0	38.49	2.91	Sandy Silt to Clayey Silt	ML	medium dense	115	11	44.6	60	49	35		
5.95	19.5	33.48	3.44	Clayey Silt to Silty Clay	ML/CL	very stiff	120	13		70			1.93	>10
6.10	20.0	47.65	2.39	Sandy Silt to Clayey Silt	ML	medium dense	115	14	54.2	50	54	36		
6.25	20.5	#DIV/0!	#DIV/0!	#REF!	#REF!	#REF!	#REF!	#DIV/0!	#REF!	#DIV/0!	#REF!	#REF!	#REF!	#REF!

CLIENT: APEX
PROJECT: Viking Solar

CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

LOCATION: See Site and Boring Location Plan

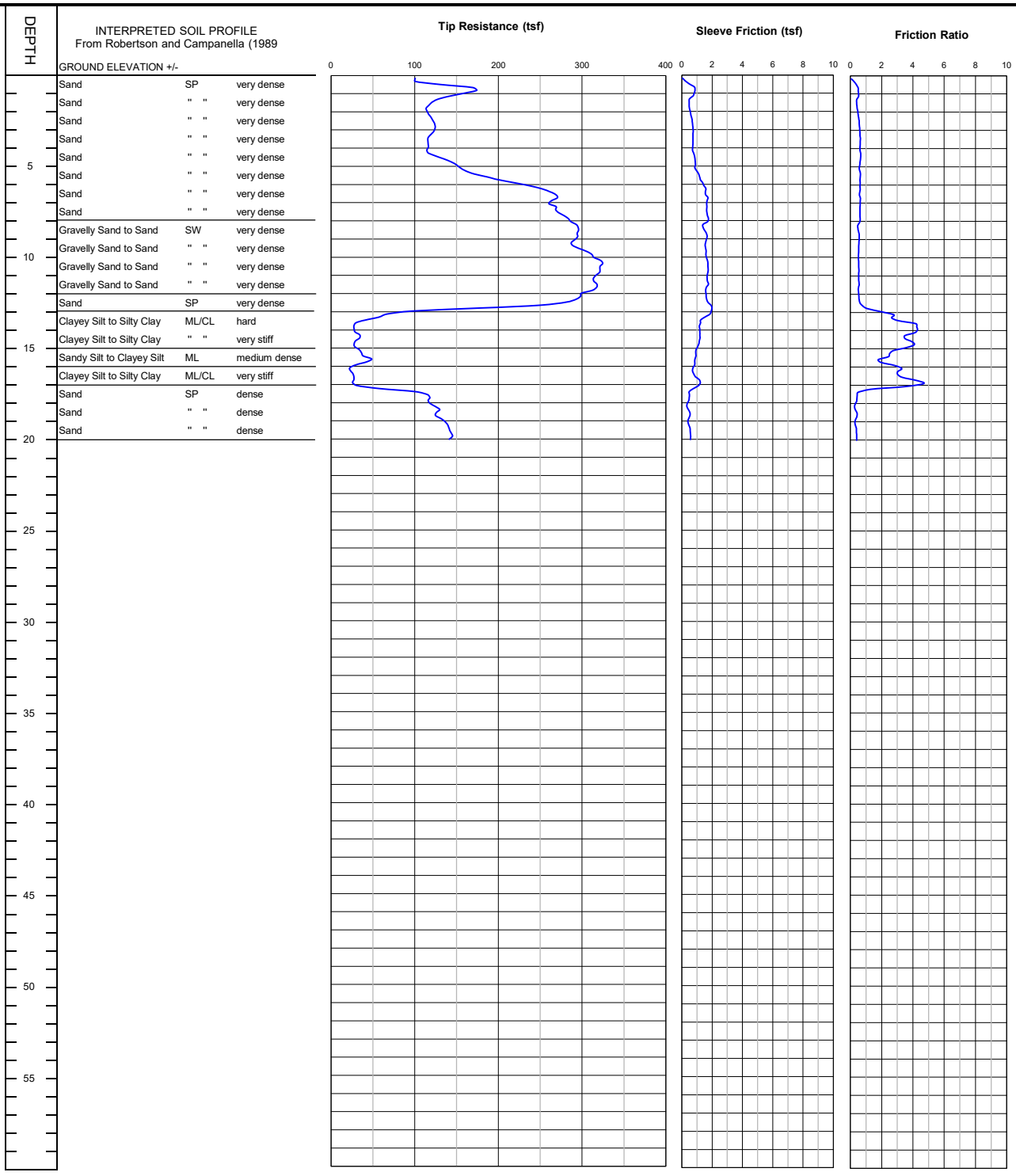
DATE: 11/25/2020

CONE SOUNDING DATA CPT-7

INTERPRETED SOIL PROFILE
From Robertson and Campanella (1989

GROUND ELEVATION +/-

Sand	SP	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Gravelly Sand to Sand	SW	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Sand	SP	very dense
Clayey Silt to Silty Clay	ML/CL	hard
Clayey Silt to Silty Clay	" "	very stiff
Sandy Silt to Clayey Silt	ML	medium dense
Clayey Silt to Silty Clay	ML/CL	very stiff
Sand	SP	dense
Sand	" "	dense
Sand	" "	dense



END OF SOUNDING AT 20 ft.

Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-7

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/25/2020

CONE SOUNDING: CPT-7

Est. GWT (ft): 8

Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	110.42	0.23	Sand	SP	very dense	110	17	208.7	0	138	47		
0.30	1.0	167.21	0.50	Sand	SP	very dense	110	26	316.1	5	134	47		
0.45	1.5	129.27	0.44	Sand	SP	very dense	110	20	244.4	5	119	45		
0.60	2.0	115.08	0.44	Sand	SP	very dense	110	18	217.5	5	110	43		
0.75	2.5	119.15	0.53	Sand	SP	very dense	110	18	225.2	5	108	43		
0.93	3.0	123.98	0.58	Sand	SP	very dense	110	19	234.4	5	106	43		
1.08	3.5	118.72	0.62	Sand	SP	very dense	110	18	224.4	10	102	42		
1.23	4.0	116.00	0.62	Sand	SP	very dense	110	18	219.3	10	99	42		
1.38	4.5	118.55	0.64	Sand	SP	very dense	110	18	224.1	10	98	42		
1.53	5.0	143.03	0.62	Sand	SP	very dense	110	22	270.4	5	102	42		
1.68	5.5	168.30	0.61	Sand	SP	very dense	110	26	304.5	5	105	43		
1.83	6.0	219.12	0.62	Sand	SP	very dense	110	34	378.8	5	112	44		
1.98	6.5	260.91	0.60	Sand	SP	very dense	110	40	432.6	0	116	44		
2.13	7.0	264.77	0.63	Sand	SP	very dense	110	41	422.5	0	115	44		
2.28	7.5	269.75	0.61	Sand	SP	very dense	110	42	415.3	0	115	44		
2.45	8.0	282.87	0.61	Gravelly Sand to Sand	SW	very dense	115	38	420.9	0	115	44		
2.60	8.5	294.67	0.49	Gravelly Sand to Sand	SW	very dense	115	39	431.9	0	116	44		
2.75	9.0	293.37	0.56	Gravelly Sand to Sand	SW	very dense	115	39	423.7	0	115	44		
2.90	9.5	290.59	0.54	Gravelly Sand to Sand	SW	very dense	115	39	413.7	0	114	44		
3.05	10.0	310.39	0.52	Gravelly Sand to Sand	SW	very dense	115	41	435.8	0	116	44		
3.20	10.5	322.56	0.53	Gravelly Sand to Sand	SW	very dense	115	43	446.8	0	117	44		
3.35	11.0	319.52	0.53	Gravelly Sand to Sand	SW	very dense	115	43	436.8	0	116	44		
3.50	11.5	315.12	0.54	Gravelly Sand to Sand	SW	very dense	115	42	425.3	0	115	44		
3.65	12.0	309.58	0.52	Gravelly Sand to Sand	SW	very dense	115	41	412.6	0	114	44		
3.80	12.5	290.73	0.57	Gravelly Sand to Sand	SW	very dense	115	39	382.8	0	112	44		
3.95	13.0	175.49	1.29	Sand to Silty Sand	SP/SM	very dense	115	32	228.3	15	97	42		
4.13	13.5	54.86	2.82	Sandy Silt to Clayey Silt	ML	medium dense	115	16	70.5	45	62	37		
4.28	14.0	28.02	4.24	Silty Clay to Clay	CL	very stiff	125	16		75			1.61	>10
4.43	14.5	32.37	3.71	Clayey Silt to Silty Clay	ML/CL	very stiff	120	13		70			1.87	>10
4.58	15.0	28.37	3.88	Clayey Silt to Silty Clay	ML/CL	very stiff	120	11		75			1.63	>10
4.73	15.5	36.20	2.57	Sandy Silt to Clayey Silt	ML	medium dense	115	10	44.4	55	48	35		
4.88	16.0	35.98	2.46	Sandy Silt to Clayey Silt	ML	medium dense	115	10	43.6	55	48	35		
5.03	16.5	25.52	3.13	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		75			1.46	>10
5.18	17.0	27.95	4.14	Silty Clay to Clay	CL	very stiff	125	16		80			1.60	>10
5.33	17.5	91.28	0.73	Sand to Silty Sand	SP/SM	dense	115	17	107.2	15	75	38		
5.48	18.0	117.48	0.37	Sand	SP	dense	110	18	136.7	5	82	39		
5.65	18.5	126.93	0.34	Sand	SP	dense	110	20	146.5	5	84	40		
5.80	19.0	130.58	0.35	Sand	SP	dense	110	20	149.4	5	84	40		
5.95	19.5	140.47	0.36	Sand	SP	dense	110	22	159.4	5	86	40		
6.10	20.0	143.36	0.40	Sand	SP	dense	110	22	161.4	5	87	40		

CLIENT: APEX
PROJECT: Viking Solar

CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

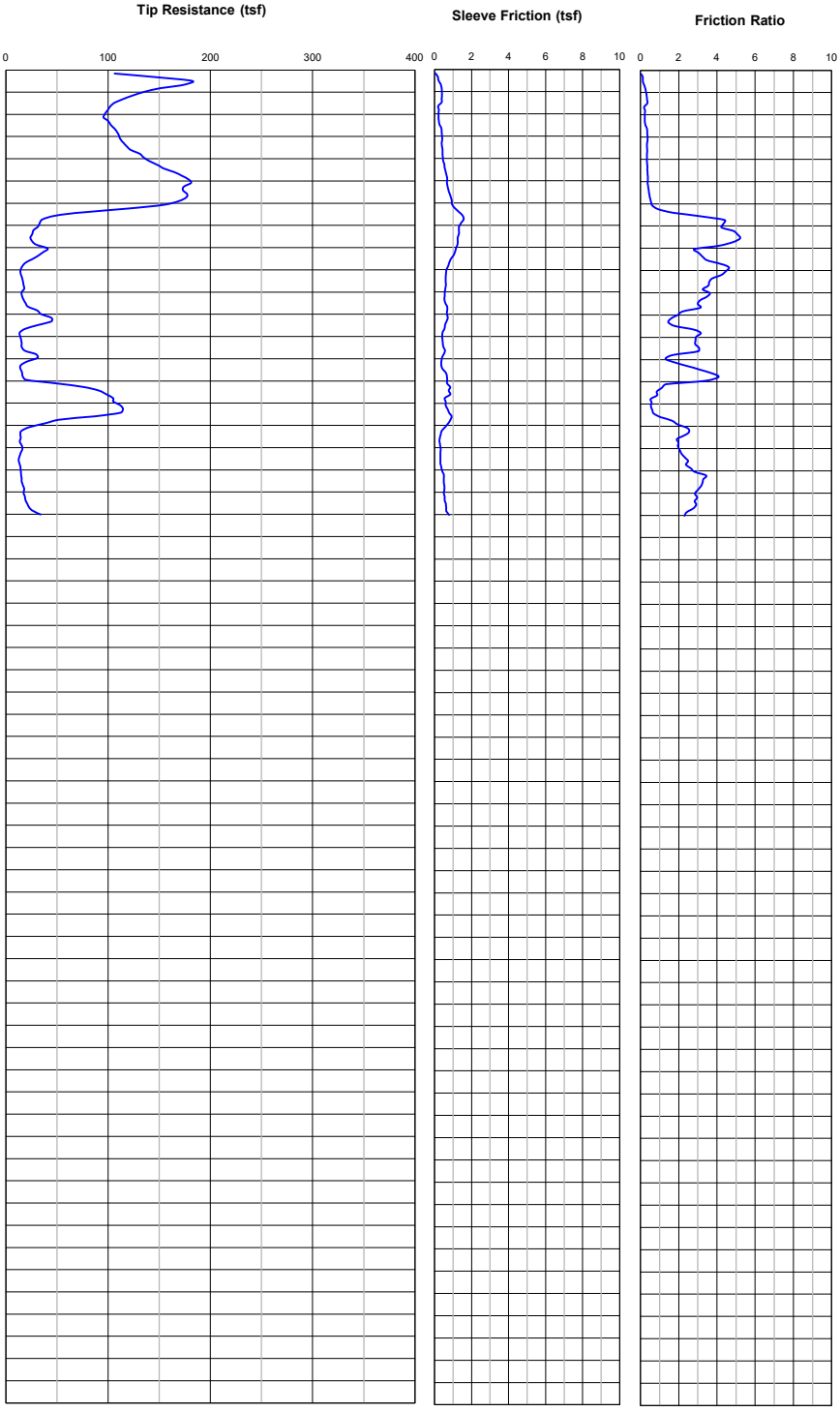
LOCATION: See Site and Boring Location Plan

DATE: 11/25/2020

CONE SOUNDING DATA CPT-8

DEPTH	INTERPRETED SOIL PROFILE From Robertson and Campanella (1989		
	GROUND ELEVATION +/-		
	Sand	SP	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
5	Sand	" "	very dense
	Sand	" "	very dense
	Sandy Silt to Clayey Silt	ML	dense
	Silty Clay to Clay	CL	very stiff
	Silty Clay to Clay	" "	very stiff
10	Silty Clay to Clay	" "	stiff
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Sandy Silt to Clayey Silt	ML	medium dense
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	stiff
15	Sand to Silty Sand	SP/SM	dense
	Sand to Silty Sand	" "	dense
	Clayey Silt to Silty Clay	ML/CL	stiff
	Clayey Silt to Silty Clay	" "	stiff
	Clayey Silt to Silty Clay	" "	stiff
20	Clayey Silt to Silty Clay	" "	very stiff

END OF SOUNDING AT 20 ft.



Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-8

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/25/2020

CONE SOUNDING: CPT-8

Est. GWT (ft): 8 Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	145.53	0.09	Sand	SP	very dense	110	22	275.1	-5	146	48		
0.30	1.0	153.79	0.24	Sand	SP	very dense	110	24	290.7	0	131	46		
0.45	1.5	114.82	0.34	Sand	SP	very dense	110	18	217.1	5	115	44		
0.60	2.0	99.53	0.22	Sand	SP	very dense	110	15	188.1	0	106	43		
0.75	2.5	99.29	0.24	Sand	SP	very dense	110	15	187.7	5	102	42		
0.93	3.0	108.43	0.35	Sand	SP	very dense	110	17	205.0	5	102	42		
1.08	3.5	115.16	0.35	Sand	SP	very dense	110	18	217.7	5	101	42		
1.23	4.0	129.35	0.34	Sand	SP	very dense	110	20	244.5	0	103	42		
1.38	4.5	147.56	0.35	Sand	SP	very dense	110	23	278.9	0	105	43		
1.53	5.0	171.74	0.37	Sand	SP	very dense	110	26	324.7	0	107	43		
1.68	5.5	176.33	0.42	Sand	SP	very dense	110	27	319.0	0	107	43		
1.83	6.0	166.51	0.56	Sand	SP	very dense	110	26	287.9	5	104	43		
1.98	6.5	81.27	1.94	Silty Sand to Sandy Silt	SM/ML	dense	115	18	134.6	30	81	39		
2.13	7.0	33.35	4.33	Silty Clay to Clay	CL	very stiff	125	19		65			1.94	>10
2.28	7.5	25.64	5.05	Clay	CL/CH	very stiff	125	21		80			1.48	>10
2.45	8.0	32.28	3.93	Clayey Silt to Silty Clay	ML/CL	very stiff	120	13		65			1.87	>10
2.60	8.5	30.83	3.25	Clayey Silt to Silty Clay	ML/CL	very stiff	120	12		60			1.79	>10
2.75	9.0	16.23	4.43	Clay	CL/CH	stiff	125	13		90			0.93	>10
2.90	9.5	15.73	3.86	Silty Clay to Clay	CL	stiff	125	9		85			0.90	>10
3.05	10.0	16.84	3.48	Silty Clay to Clay	CL	stiff	125	10		80			0.96	>10
3.20	10.5	17.40	3.19	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		80			0.99	>10
3.35	11.0	29.00	2.43	Sandy Silt to Clayey Silt	ML	medium dense	115	8	38.9	55	45	34		
3.50	11.5	40.18	1.61	Silty Sand to Sandy Silt	SM/ML	medium dense	115	9	53.2	40	54	36		
3.65	12.0	15.62	2.95	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		80			0.89	>10
3.80	12.5	15.28	2.93	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		85			0.87	>10
3.95	13.0	26.26	1.99	Sandy Silt to Clayey Silt	ML	medium dense	115	8	33.5	55	40	34		
4.13	13.5	16.44	2.45	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		80			0.93	>10
4.28	14.0	17.34	3.75	Silty Clay to Clay	CL	stiff	125	10		90			0.98	>10
4.43	14.5	72.60	1.10	Sand to Silty Sand	SP/SM	medium dense	115	13	89.3	25	69	38		
4.58	15.0	102.79	0.66	Sand to Silty Sand	SP/SM	dense	115	19	125.2	15	79	39		
4.73	15.5	112.90	0.61	Sand	SP	dense	110	17	136.2	10	82	39		
4.88	16.0	49.73	1.78	Silty Sand to Sandy Silt	SM/ML	medium dense	115	11	59.4	40	57	36		
5.03	16.5	14.62	2.25	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		85			0.82	>10
5.18	17.0	15.11	2.00	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		80			0.85	>10
5.33	17.5	13.52	2.31	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		90			0.75	>10
5.48	18.0	14.11	2.61	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		95			0.79	>10
5.65	18.5	15.20	3.32	Silty Clay to Clay	CL	stiff	125	9		100			0.85	>10
5.80	19.0	17.34	2.99	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		90			0.98	>10
5.95	19.5	19.47	2.91	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		85			1.10	>10
6.10	20.0	27.74	2.49	Sandy Silt to Clayey Silt	ML	loose	115	8	30.6	70	38	33		

CLIENT: APEX
PROJECT: Viking Solar

CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

LOCATION: See Site and Boring Location Plan

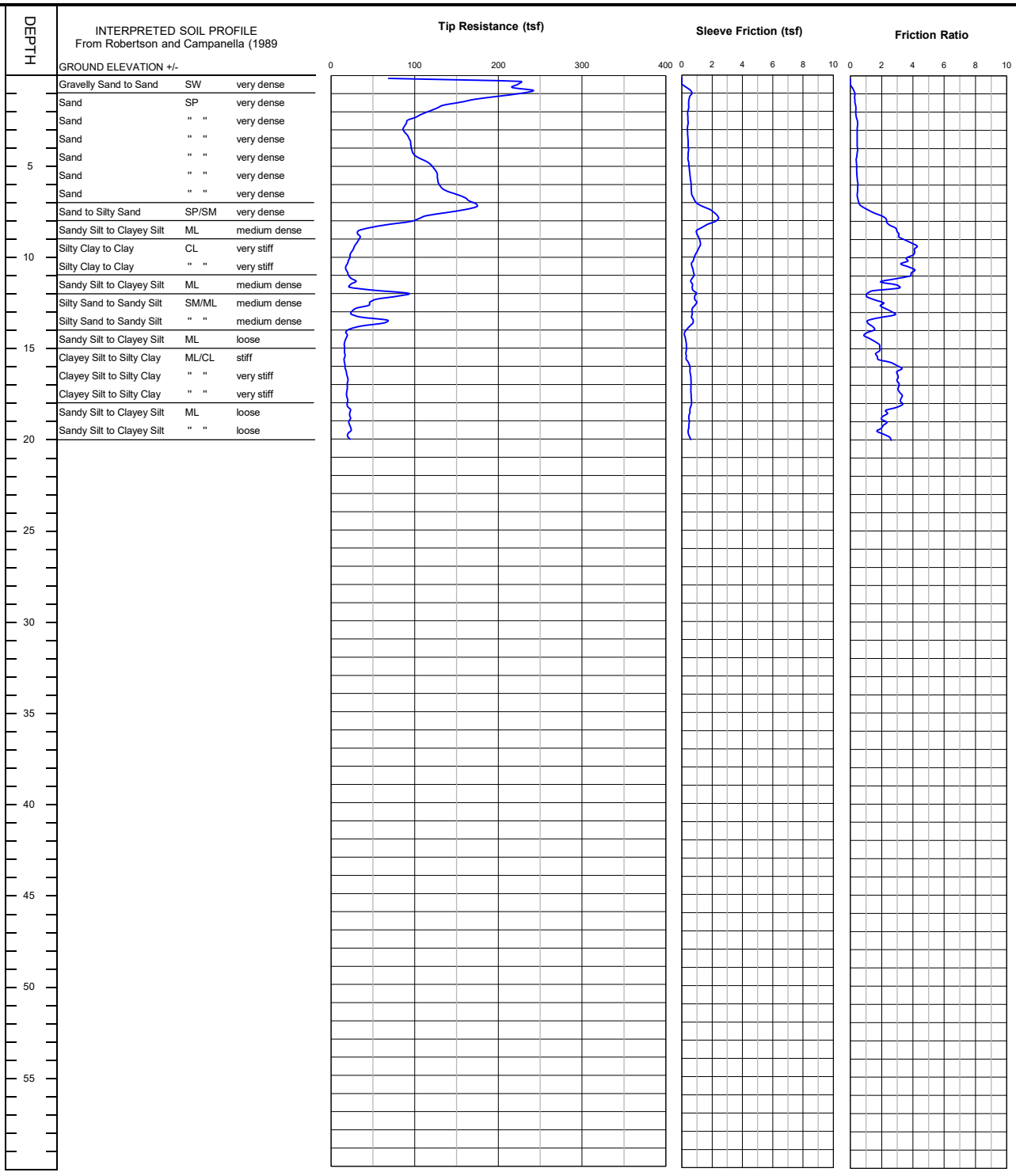
DATE: 11/25/2020

CONE SOUNDING DATA CPT-9

INTERPRETED SOIL PROFILE
From Robertson and Campanella (1989

GROUND ELEVATION +/-

Gravelly Sand to Sand	SW	very dense
Sand	SP	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand to Silty Sand	SP/SM	very dense
Sandy Silt to Clayey Silt	ML	medium dense
Silty Clay to Clay	CL	very stiff
Silty Clay to Clay	" "	very stiff
Sandy Silt to Clayey Silt	ML	medium dense
Silty Sand to Sandy Silt	SM/ML	medium dense
Silty Sand to Sandy Silt	" "	medium dense
Sandy Silt to Clayey Silt	ML	loose
Clayey Silt to Silty Clay	ML/CL	stiff
Clayey Silt to Silty Clay	" "	very stiff
Clayey Silt to Silty Clay	" "	very stiff
Sandy Silt to Clayey Silt	ML	loose
Sandy Silt to Clayey Silt	" "	loose



END OF SOUNDING AT 20 ft.

Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-9

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/25/2020

CONE SOUNDING: CPT-9

Est. GWT (ft): 8

Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	172.88	0.00	Sand	SP	very dense	110	27	326.8	#NUM!	151	49		
0.30	1.0	228.48	0.21	Gravelly Sand to Sand	SW	very dense	115	30	431.9	-5	143	48		
0.45	1.5	174.59	0.28	Sand	SP	very dense	110	27	330.0	0	127	46		
0.60	2.0	125.63	0.35	Sand	SP	very dense	110	19	237.5	5	113	44		
0.75	2.5	100.20	0.39	Sand	SP	very dense	110	15	189.4	5	102	42		
0.93	3.0	87.89	0.44	Sand	SP	very dense	110	14	166.1	10	96	41		
1.08	3.5	90.65	0.43	Sand	SP	very dense	110	14	171.4	10	94	41		
1.23	4.0	95.16	0.44	Sand	SP	very dense	110	15	179.9	5	93	41		
1.38	4.5	98.46	0.43	Sand	SP	very dense	110	15	186.1	5	93	41		
1.53	5.0	114.15	0.38	Sand	SP	very dense	110	18	215.8	5	95	41		
1.68	5.5	125.38	0.41	Sand	SP	very dense	110	19	226.4	5	97	42		
1.83	6.0	128.65	0.46	Sand	SP	very dense	110	20	222.0	5	96	41		
1.98	6.5	141.83	0.45	Sand	SP	very dense	110	22	234.8	5	98	42		
2.13	7.0	166.09	0.52	Sand	SP	very dense	110	26	264.6	5	101	42		
2.28	7.5	156.95	1.17	Sand to Silty Sand	SP/SM	very dense	115	29	241.1	10	98	42		
2.45	8.0	104.34	2.22	Silty Sand to Sandy Silt	SM/ML	dense	115	23	154.8	25	85	40		
2.60	8.5	48.74	2.80	Sandy Silt to Clayey Silt	ML	medium dense	115	14	71.2	45	62	37		
2.75	9.0	33.19	3.24	Clayey Silt to Silty Clay	ML/CL	very stiff	120	13		60			1.93	>10
2.90	9.5	28.83	4.09	Silty Clay to Clay	CL	very stiff	125	16		70			1.67	>10
3.05	10.0	23.35	3.90	Silty Clay to Clay	CL	very stiff	125	13		75			1.34	>10
3.20	10.5	19.43	3.54	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		75			1.11	>10
3.35	11.0	19.42	3.95	Silty Clay to Clay	CL	very stiff	125	11		80			1.11	>10
3.50	11.5	25.87	2.58	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		60			1.49	>10
3.65	12.0	55.20	1.87	Silty Sand to Sandy Silt	SM/ML	medium dense	115	12	72.6	35	63	37		
3.80	12.5	60.36	1.58	Silty Sand to Sandy Silt	SM/ML	medium dense	115	13	78.5	30	65	37		
3.95	13.0	33.71	2.28	Sandy Silt to Clayey Silt	ML	medium dense	115	10	43.3	55	48	35		
4.13	13.5	42.46	1.91	Sandy Silt to Clayey Silt	ML	medium dense	115	12	54.0	45	54	36		
4.28	14.0	40.82	1.38	Silty Sand to Sandy Silt	SM/ML	medium dense	115	9	51.3	40	53	35		
4.43	14.5	18.44	1.06	Sandy Silt to Clayey Silt	ML	loose	115	5	22.9	55	29	32		
4.58	15.0	16.17	1.77	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		75			0.91	>10
4.73	15.5	16.43	1.74	Sandy Silt to Clayey Silt	ML	loose	115	5	20.0	70	25	31		
4.88	16.0	16.18	2.66	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		85			0.91	>10
5.03	16.5	18.73	3.01	Clayey Silt to Silty Clay	ML/CL	very stiff	120	7		85			1.06	>10
5.18	17.0	19.75	3.06	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		85			1.12	>10
5.33	17.5	18.89	3.17	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		85			1.07	>10
5.48	18.0	19.42	3.26	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		85			1.10	>10
5.65	18.5	21.86	2.54	Clayey Silt to Silty Clay	ML/CL	very stiff	120	9		75			1.24	>10
5.80	19.0	22.20	2.13	Sandy Silt to Clayey Silt	ML	loose	115	6	25.1	70	32	32		
5.95	19.5	23.06	1.92	Sandy Silt to Clayey Silt	ML	loose	115	7	25.9	70	33	33		
6.10	20.0	20.94	2.41	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		80			1.19	>10

CLIENT: APEX
PROJECT: Viking Solar

CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

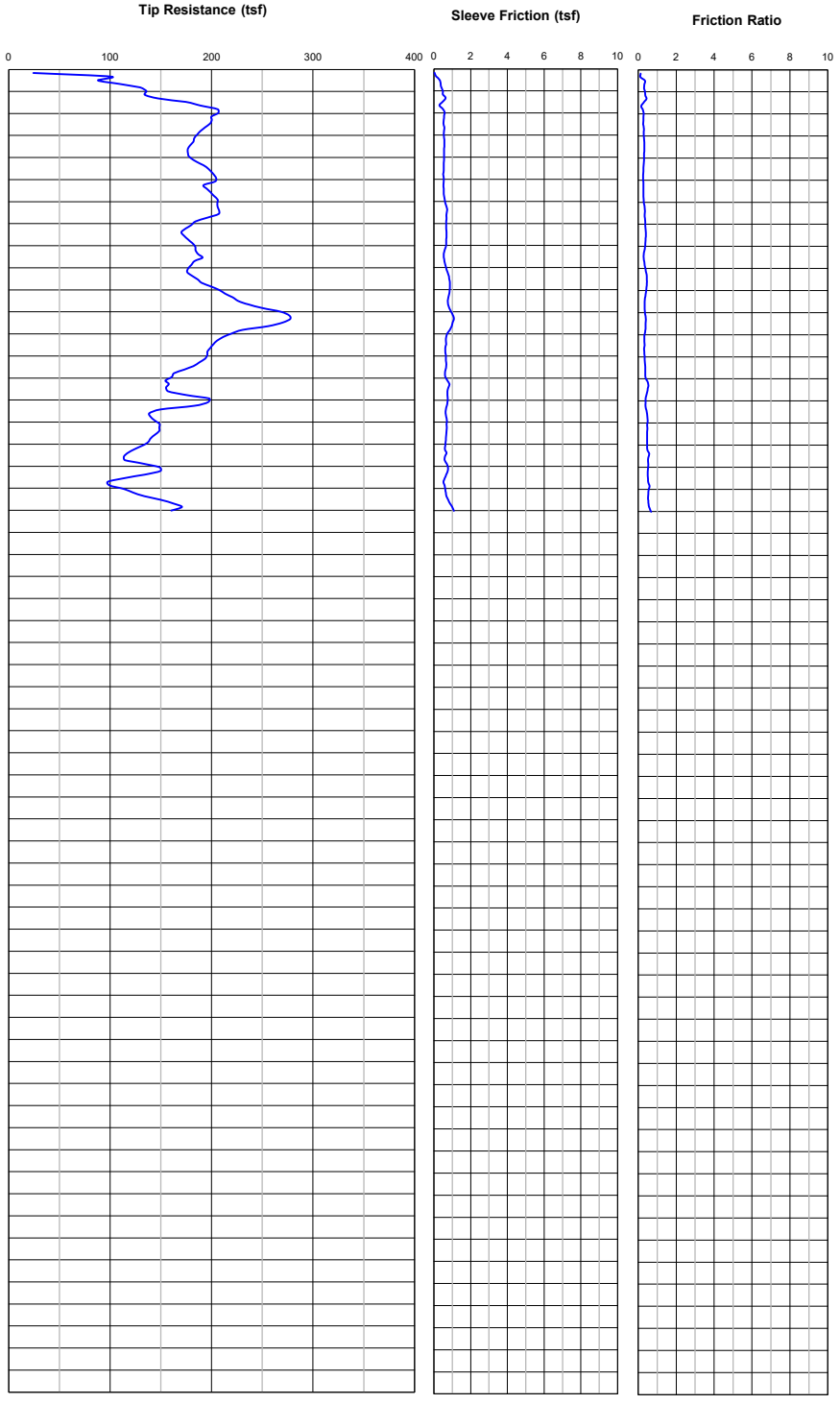
LOCATION: See Site and Boring Location Plan

DATE: 11/25/2020

CONE SOUNDING DATA CPT-10

DEPTH	INTERPRETED SOIL PROFILE From Robertson and Campanella (1989		
	GROUND ELEVATION +/-		
	Sand	SP	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
5	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	very dense
10	Sand	" "	very dense
	Gravelly Sand to Sand	SW	very dense
	Gravelly Sand to Sand	" "	very dense
	Sand	SP	very dense
	Sand	" "	very dense
15	Sand	" "	very dense
	Sand	" "	very dense
	Sand	" "	dense
	Sand	" "	dense
	Sand	" "	dense
20	Sand	" "	dense

END OF SOUNDING AT 20 ft.



Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-10

LANDMARK CONSULTANTS, INC.
CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/25/2020

CONE SOUNDING: CPT-10
Est. GWT (ft): 8
Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	71.27	0.19	Sand to Silty Sand	SP/SM	very dense	115	13	134.7	5	124	45		
0.30	1.0	125.01	0.33	Sand	SP	very dense	110	19	236.3	5	125	45		
0.45	1.5	152.05	0.36	Sand	SP	very dense	110	23	287.4	0	123	45		
0.60	2.0	200.51	0.22	Sand	SP	very dense	110	31	379.0	-5	127	46		
0.75	2.5	199.43	0.27	Sand	SP	very dense	110	31	377.0	0	123	45		
0.93	3.0	189.51	0.29	Sand	SP	very dense	110	29	358.2	0	118	45		
1.08	3.5	181.15	0.31	Sand	SP	very dense	110	28	342.4	0	115	44		
1.23	4.0	176.91	0.31	Sand	SP	very dense	110	27	334.4	0	112	44		
1.38	4.5	188.47	0.28	Sand	SP	very dense	110	29	356.3	0	112	44		
1.53	5.0	201.72	0.26	Sand	SP	very dense	110	31	381.3	0	112	44		
1.68	5.5	197.54	0.27	Sand	SP	very dense	110	30	356.6	0	110	43		
1.83	6.0	204.67	0.29	Sand	SP	very dense	110	31	353.1	0	110	43		
1.98	6.5	206.78	0.34	Sand	SP	very dense	110	32	342.3	0	109	43		
2.13	7.0	186.51	0.36	Sand	SP	very dense	110	29	297.1	0	105	43		
2.28	7.5	172.54	0.39	Sand	SP	very dense	110	27	265.2	0	101	42		
2.45	8.0	180.50	0.37	Sand	SP	very dense	110	28	268.4	0	102	42		
2.60	8.5	187.23	0.30	Sand	SP	very dense	110	29	274.6	0	102	42		
2.75	9.0	180.14	0.34	Sand	SP	very dense	110	28	260.7	0	101	42		
2.90	9.5	180.69	0.44	Sand	SP	very dense	110	28	258.1	0	100	42		
3.05	10.0	199.07	0.43	Sand	SP	very dense	110	31	280.8	0	103	42		
3.20	10.5	220.02	0.36	Sand	SP	very dense	110	34	306.5	0	106	43		
3.35	11.0	251.58	0.34	Gravelly Sand to Sand	SW	very dense	115	34	346.1	0	109	43		
3.50	11.5	274.63	0.38	Gravelly Sand to Sand	SW	very dense	115	37	372.9	0	111	44		
3.65	12.0	235.14	0.36	Sand	SP	very dense	110	36	315.4	0	106	43		
3.80	12.5	206.17	0.32	Sand	SP	very dense	110	32	273.5	0	102	42		
3.95	13.0	196.77	0.32	Sand	SP	very dense	110	30	258.2	0	100	42		
4.13	13.5	187.76	0.35	Sand	SP	very dense	110	29	243.7	0	99	42		
4.28	14.0	165.70	0.37	Sand	SP	very dense	110	25	212.8	0	95	41		
4.43	14.5	155.82	0.50	Sand	SP	very dense	110	24	198.1	5	93	41		
4.58	15.0	176.62	0.42	Sand	SP	very dense	110	27	222.3	5	96	41		
4.73	15.5	176.21	0.39	Sand	SP	very dense	110	27	219.6	5	96	41		
4.88	16.0	142.60	0.47	Sand	SP	dense	110	22	176.0	5	89	40		
5.03	16.5	146.92	0.46	Sand	SP	dense	110	23	179.6	5	90	41		
5.18	17.0	136.42	0.47	Sand	SP	dense	110	21	165.2	5	87	40		
5.33	17.5	118.49	0.53	Sand	SP	dense	110	18	142.2	10	83	40		
5.48	18.0	131.81	0.52	Sand	SP	dense	110	20	156.8	10	86	40		
5.65	18.5	132.82	0.50	Sand	SP	dense	110	20	156.6	10	86	40		
5.80	19.0	103.65	0.55	Sand	SP	dense	110	16	121.2	10	78	39		
5.95	19.5	135.30	0.52	Sand	SP	dense	110	21	156.8	10	86	40		
6.10	20.0	164.49	0.60	Sand	SP	very dense	110	25	189.0	10	91	41		

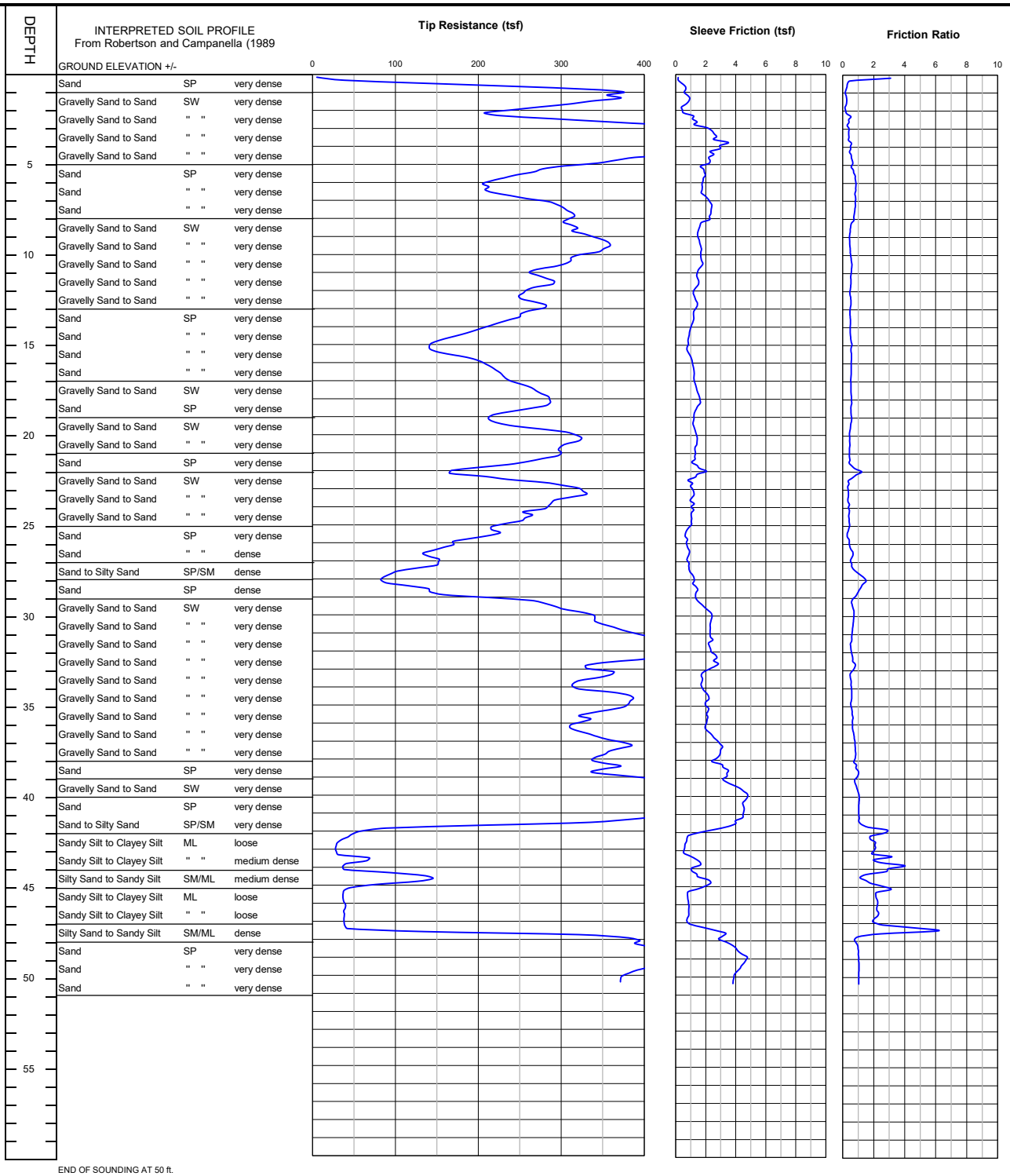
CLIENT: APEX
PROJECT: Viking Solar

CONE PENETROMETER: Middle Earth Geotesting Truck Mounted Electric Cone with 23 ton reaction weight

LOCATION: See Site and Boring Location Plan

DATE: 11/25/2020

CONE SOUNDING DATA CPT-11



Sand	SP	very dense
Gravelly Sand to Sand	SW	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Sand	SP	very dense
Sand	" "	very dense
Sand	" "	very dense
Gravelly Sand to Sand	SW	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Sand	SP	very dense
Sand	" "	very dense
Sand	" "	very dense
Sand	" "	very dense
Gravelly Sand to Sand	SW	very dense
Sand	SP	very dense
Gravelly Sand to Sand	SW	very dense
Gravelly Sand to Sand	" "	very dense
Sand	SP	very dense
Gravelly Sand to Sand	SW	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Sand	SP	very dense
Sand	" "	dense
Sand to Silty Sand	SP/SM	dense
Sand	SP	dense
Gravelly Sand to Sand	SW	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Gravelly Sand to Sand	" "	very dense
Sand	SP	very dense
Gravelly Sand to Sand	SW	very dense
Sand	SP	very dense
Sand to Silty Sand	SP/SM	very dense
Sandy Silt to Clayey Silt	ML	loose
Sandy Silt to Clayey Silt	" "	medium dense
Silty Sand to Sandy Silt	SM/ML	medium dense
Sandy Silt to Clayey Silt	ML	loose
Sandy Silt to Clayey Silt	" "	loose
Silty Sand to Sandy Silt	SM/ML	dense
Sand	SP	very dense
Sand	" "	very dense
Sand	" "	very dense

END OF SOUNDING AT 50 ft.

Project No.		PLATE
LE20189	LANDMARK Geo-Engineers and Geologists	B-11

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/25/2020

CONE SOUNDING: CPT-11

Est. GWT (ft): 8

Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	59.14	1.28	Silty Sand to Sandy Silt	SM/ML	very dense	115	13	111.8	25	119	45		
0.30	1.0	315.65	0.21	Gravelly Sand to Sand	SW	very dense	115	42	596.7	-5	152	49		
0.45	1.5	354.30	0.24	Gravelly Sand to Sand	SW	very dense	115	47	669.8	-5	148	49		
0.60	2.0	275.88	0.18	Gravelly Sand to Sand	SW	very dense	115	37	521.5	-5	136	47		
0.75	2.5	240.68	0.39	Gravelly Sand to Sand	SW	very dense	115	32	455.0	0	128	46		
0.93	3.0	433.29	0.36	Gravelly Sand to Sand	SW	very dense	115	58	819.1	-5	142	48		
1.08	3.5	652.47	0.39	Gravelly Sand to Sand	SW	very dense	115	87	1233.4	-5	152	49		
1.23	4.0	629.21	0.48	Gravelly Sand to Sand	SW	very dense	115	84	1189.4	-5	149	49		
1.38	4.5	527.03	0.50	Gravelly Sand to Sand	SW	very dense	115	70	996.3	-5	142	48		
1.53	5.0	367.84	0.61	Gravelly Sand to Sand	SW	very dense	115	49	684.3	0	129	46		
1.68	5.5	273.38	0.68	Sand	SP	very dense	110	42	484.2	0	119	45		
1.83	6.0	217.37	0.83	Sand	SP	very dense	110	33	368.6	5	111	44		
1.98	6.5	212.69	0.82	Sand	SP	very dense	110	33	346.4	5	109	43		
2.13	7.0	260.19	0.82	Sand	SP	very dense	110	40	408.3	5	114	44		
2.28	7.5	300.98	0.79	Sand	SP	very dense	110	46	456.3	5	117	44		
2.45	8.0	312.69	0.73	Sand	SP	very dense	110	48	458.9	0	117	44		
2.60	8.5	311.73	0.52	Gravelly Sand to Sand	SW	very dense	115	42	451.1	0	117	44		
2.75	9.0	326.71	0.45	Gravelly Sand to Sand	SW	very dense	115	44	466.1	0	118	45		
2.90	9.5	355.75	0.45	Gravelly Sand to Sand	SW	very dense	115	47	500.5	0	120	45		
3.05	10.0	339.66	0.50	Gravelly Sand to Sand	SW	very dense	115	45	471.4	0	118	45		
3.20	10.5	309.57	0.56	Gravelly Sand to Sand	SW	very dense	115	41	424.0	0	115	44		
3.35	11.0	274.33	0.56	Sand	SP	very dense	110	42	371.1	0	111	44		
3.50	11.5	281.94	0.52	Gravelly Sand to Sand	SW	very dense	115	38	376.9	0	112	44		
3.65	12.0	271.72	0.49	Gravelly Sand to Sand	SW	very dense	115	36	358.8	0	110	43		
3.80	12.5	251.64	0.50	Sand	SP	very dense	110	39	328.5	0	108	43		
3.95	13.0	276.67	0.51	Gravelly Sand to Sand	SW	very dense	115	37	357.2	0	110	43		
4.13	13.5	254.05	0.47	Sand	SP	very dense	110	39	324.4	0	107	43		
4.28	14.0	225.70	0.49	Sand	SP	very dense	110	35	285.3	0	103	42		
4.43	14.5	191.32	0.49	Sand	SP	very dense	110	29	239.4	5	98	42		
4.58	15.0	153.63	0.55	Sand	SP	very dense	110	24	190.4	5	91	41		
4.73	15.5	145.15	0.54	Sand	SP	dense	110	22	178.2	5	90	41		
4.88	16.0	193.31	0.55	Sand	SP	very dense	110	30	235.1	5	98	42		
5.03	16.5	221.21	0.55	Sand	SP	very dense	110	34	266.5	5	101	42		
5.18	17.0	235.17	0.52	Sand	SP	very dense	110	36	280.8	5	103	42		
5.33	17.5	262.50	0.53	Gravelly Sand to Sand	SW	very dense	115	35	310.5	0	106	43		
5.48	18.0	282.20	0.56	Gravelly Sand to Sand	SW	very dense	115	38	330.6	0	108	43		
5.65	18.5	277.00	0.54	Gravelly Sand to Sand	SW	very dense	115	37	321.5	0	107	43		
5.80	19.0	224.23	0.55	Sand	SP	very dense	110	34	257.9	5	100	42		
5.95	19.5	227.48	0.52	Sand	SP	very dense	110	35	259.5	5	101	42		
6.10	20.0	300.15	0.45	Gravelly Sand to Sand	SW	very dense	115	40	339.5	0	109	43		
6.25	20.5	316.97	0.45	Gravelly Sand to Sand	SW	very dense	115	42	355.4	0	110	43		
6.40	21.0	298.67	0.43	Gravelly Sand to Sand	SW	very dense	115	40	332.0	0	108	43		
6.55	21.5	277.41	0.43	Gravelly Sand to Sand	SW	very dense	115	37	305.7	0	105	43		
6.70	22.0	200.30	0.87	Sand	SP	very dense	110	31	219.0	10	96	41		
6.85	22.5	202.93	0.62	Sand	SP	very dense	110	31	220.2	5	96	41		
7.00	23.0	300.17	0.36	Gravelly Sand to Sand	SW	very dense	115	40	323.2	0	107	43		
7.18	23.5	323.13	0.36	Gravelly Sand to Sand	SW	very dense	115	43	345.2	0	109	43		
7.33	24.0	288.20	0.37	Gravelly Sand to Sand	SW	very dense	115	38	305.5	0	105	43		
7.48	24.5	266.25	0.41	Gravelly Sand to Sand	SW	very dense	115	36	280.0	0	103	42		
7.63	25.0	247.06	0.43	Gravelly Sand to Sand	SW	very dense	115	33	257.9	5	100	42		
7.78	25.5	219.49	0.34	Sand	SP	very dense	110	34	227.4	5	97	42		
7.93	26.0	191.17	0.38	Sand	SP	very dense	110	29	196.8	5	92	41		
8.08	26.5	151.91	0.56	Sand	SP	dense	110	23	155.3	10	85	40		
8.23	27.0	148.28	0.55	Sand	SP	dense	110	23	150.6	10	85	40		
8.38	27.5	126.00	0.74	Sand	SP	dense	110	19	127.2	15	80	39		
8.53	28.0	87.59	1.37	Sand to Silty Sand	SP/SM	medium dense	115	16	87.8	30	69	38		
8.68	28.5	114.62	1.17	Sand to Silty Sand	SP/SM	dense	115	21	114.1	25	76	39		
8.85	29.0	170.62	0.81	Sand	SP	dense	110	26	168.8	15	88	40		
9.00	29.5	279.41	0.62	Sand	SP	very dense	110	43	274.7	5	102	42		
9.15	30.0	322.78	0.72	Gravelly Sand to Sand	SW	very dense	115	43	315.3	5	106	43		
9.30	30.5	343.52	0.68	Gravelly Sand to Sand	SW	very dense	115	46	333.4	5	108	43		
9.45	31.0	374.96	0.61	Gravelly Sand to Sand	SW	very dense	115	50	361.5	5	110	43		
9.60	31.5	422.76	0.55	Gravelly Sand to Sand	SW	very dense	115	56	405.0	0	114	44		
9.75	32.0	429.99	0.54	Gravelly Sand to Sand	SW	very dense	115	57	409.3	0	114	44		
9.90	32.5	415.25	0.63	Gravelly Sand to Sand	SW	very dense	115	55	392.8	5	113	44		
10.05	33.0	337.37	0.75	Gravelly Sand to Sand	SW	very dense	115	45	317.2	5	107	43		
10.20	33.5	356.58	0.49	Gravelly Sand to Sand	SW	very dense	115	48	333.2	5	108	43		
10.38	34.0	316.91	0.55	Gravelly Sand to Sand	SW	very dense	115	42	294.3	5	104	43		
10.53	34.5	355.21	0.57	Gravelly Sand to Sand	SW	very dense	115	47	327.9	5	108	43		
10.68	35.0	383.78	0.54	Gravelly Sand to Sand	SW	very dense	115	51	352.2	5	110	43		
10.83	35.5	356.15	0.60	Gravelly Sand to Sand	SW	very dense	115	47	325.0	5	107	43		
10.98	36.0	327.27	0.64	Gravelly Sand to Sand	SW	very dense	115	44	296.9	5	105	43		
11.13	36.5	318.39	0.67	Gravelly Sand to Sand	SW	very dense	115	42	287.2	5	104	43		
11.28	37.0	357.71	0.77	Gravelly Sand to Sand	SW	very dense	115	48	320.9	10	107	43		
11.43	37.5	371.11	0.82	Gravelly Sand to Sand	SW	very dense	115	49	331.1	10	108	43		
11.58	38.0	343.67	0.78	Sand	SP	very dense	110	53	305.0	10	105	43		
11.73	38.5	357.56	0.91	Sand	SP	very dense	110	55	315.7	10	106	43		

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Viking Solar **Project No:** LE20189 **Date:** 11/25/2020

CONE SOUNDING: CPT-11

Est. GWT (ft): 8

Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
11.88	39.0	367.40	0.91	Sand	SP	very dense	110	57	322.8	10	107	43		
12.05	39.5	442.32	0.86	Gravelly Sand to Sand	SW	very dense	115	59	386.7	5	112	44		
12.20	40.0	456.03	1.03	Sand	SP	very dense	110	70	396.7	10	113	44		
12.35	40.5	435.48	1.04	Sand	SP	very dense	110	67	377.0	10	112	44		
12.50	41.0	439.00	1.03	Sand	SP	very dense	110	68	378.3	10	112	44		
12.65	41.5	379.14	1.10	Sand	SP	very dense	110	58	325.2	10	107	43		
12.80	42.0	119.66	2.40	Silty Sand to Sandy Silt	SM/ML	dense	115	27	102.1	45	73	38		
12.95	42.5	41.55	1.89	Sandy Silt to Clayey Silt	ML	medium dense	115	12	35.3	70	42	34		
13.10	43.0	28.68	2.06	Sandy Silt to Clayey Silt	ML	loose	115	8	24.2	85	31	32		
13.25	43.5	42.75	2.35	Sandy Silt to Clayey Silt	ML	medium dense	115	12	35.9	75	42	34		
13.40	44.0	47.47	3.14	Sandy Silt to Clayey Silt	ML	medium dense	115	14	39.7	80	45	34		
13.58	44.5	88.48	1.81	Silty Sand to Sandy Silt	SM/ML	medium dense	115	20	73.7	45	63	37		
13.73	45.0	116.18	1.98	Silty Sand to Sandy Silt	SM/ML	dense	115	26	96.3	40	71	38		
13.88	45.5	40.93	2.48	Sandy Silt to Clayey Silt	ML	medium dense	115	12	33.8	75	40	34		
14.03	46.0	37.21	2.22	Sandy Silt to Clayey Silt	ML	loose	115	11	30.5	80	37	33		
14.18	46.5	38.98	2.24	Sandy Silt to Clayey Silt	ML	loose	115	11	31.9	75	39	33		
14.33	47.0	38.10	2.20	Sandy Silt to Clayey Silt	ML	loose	115	11	31.0	80	38	33		
14.48	47.5	72.14	4.40	Clayey Silt to Silty Clay	ML/CL	hard	120	29		75			4.16	>10
14.63	48.0	364.67	0.86	Sand	SP	very dense	110	56	293.8	10	104	43		
14.78	48.5	400.29	0.99	Sand	SP	very dense	110	62	321.2	10	107	43		
14.93	49.0	452.25	1.02	Sand	SP	very dense	110	70	361.5	10	110	43		
15.10	49.5	420.12	1.05	Sand	SP	very dense	110	65	334.4	10	108	43		
15.25	50.0	382.20	1.03	Sand	SP	very dense	110	59	303.1	15	105	43		

LOG OF BORING NO. B-1

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
					SAND (SP): Tan, dry, medium and fine grain sands with very few coarse sands.			Passing #200 = 3.3%
5			16		SAND (SP): Tan, dry, medium dense, medium and fine grain sands.			
10			22		SAND (SP): Tan, moist, medium and fine grain sands.			
15			13		SAND (SP): Tan, dry, medium dense, medium grain sands.			
				4.5	SILTY CLAY (CL): Brown, moist, hard.			
20			14	3.0	SILTY CLAY (CL): Brown, very moist, very stiff.			
					SILTY SAND/SAND (SM-SP): Brown, saturated, fine grain.			
					Groundwater measured at 20 feet at time of drilling. This is not considered the stabilized groundwater depth as groundwater may rise to a level higher than that measured in borehole.			
25								
30								

DATE DRILLED: 11/23/20 TOTAL DEPTH: 20 Feet DEPTH TO WATER: 20'

LOGGED BY: P. LaBrucherie TYPE OF BIT: Hollow Stem Auger DIAMETER: 8 in.

SURFACE ELEVATION: Approximately 39' HAMMER WT.: 140 lbs. DROP: 30 in.

PROJECT No. LE20189

LANDMARK Geo-Engineers and Geologists

PLATE B-12

LOG OF BORING NO. B-2

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
0					SILTY SAND/SAND (SP-SM): Light brown, little moisture, fine and very fine grain sands.			Passing #200 = 9.9%
5			19		SILTY SAND/SAND (SP-SM): Light brown, little moisture, fine and very fine grain sands.			
10			15		SAND (SP): Gray, dry to moist, medium and fine grain sands.			Passing #200 = 4.8%
15			25		SAND (SP): Gray, wet, medium and fine grain sands.			
20			18		SAND (SP): Gray, saturated, medium and fine grain sands.			
				2.5	SILTY CLAY (CL): Brown, saturated, very stiff.			
25					Groundwater measured at 18 feet at time of drilling. This is not considered the stabilized groundwater depth as groundwater may rise to a level higher than that measured in borehole.			
30								

DATE DRILLED: 11/23/20 TOTAL DEPTH: 20 Feet DEPTH TO WATER: 18'

LOGGED BY: P. LaBrucherie TYPE OF BIT: Hollow Stem Auger DIAMETER: 8 in.

SURFACE ELEVATION: Approximately 37' HAMMER WT.: 140 lbs. DROP: 30 in.

PROJECT No. LE20189

LANDMARK Geo-Engineers and Geologists

PLATE B-13

LOG OF BORING NO. B-3

SHEET 1 OF 1

DEPTH	FIELD: SAMPLE	FIELD: USCS CLASS.	FIELD: BLOW COUNT	FIELD: POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY: DRY DENSITY (pcf)	LABORATORY: MOISTURE CONTENT (% dry wt.)	LABORATORY: OTHER TESTS
					GRAVELLY SAND (SW): Grays and tans, dry, coarse and fine grain gravels.			
5			15		SAND (SP): Tan, moist, medium dense, medium and fine grain sands.			
10			22		SAND (SP): Tan, moist, medium dense, medium and fine grain sands.			Passing #200 = 3.1%
15			35		SAND (SP): Tan, saturated, dense, medium grain sands.			
					Groundwater measured at 9 feet at time of drilling. This is not considered the stabilized groundwater depth as groundwater may rise to a level higher than that measured in borehole.			
20								
25								
30								

DATE DRILLED: 11/23/20 TOTAL DEPTH: 15 Feet DEPTH TO WATER: 9'

LOGGED BY: P. LaBrucherie TYPE OF BIT: Hollow Stem Auger DIAMETER: 8 in.

SURFACE ELEVATION: Approximately 28' HAMMER WT.: 140 lbs. DROP: 30 in.

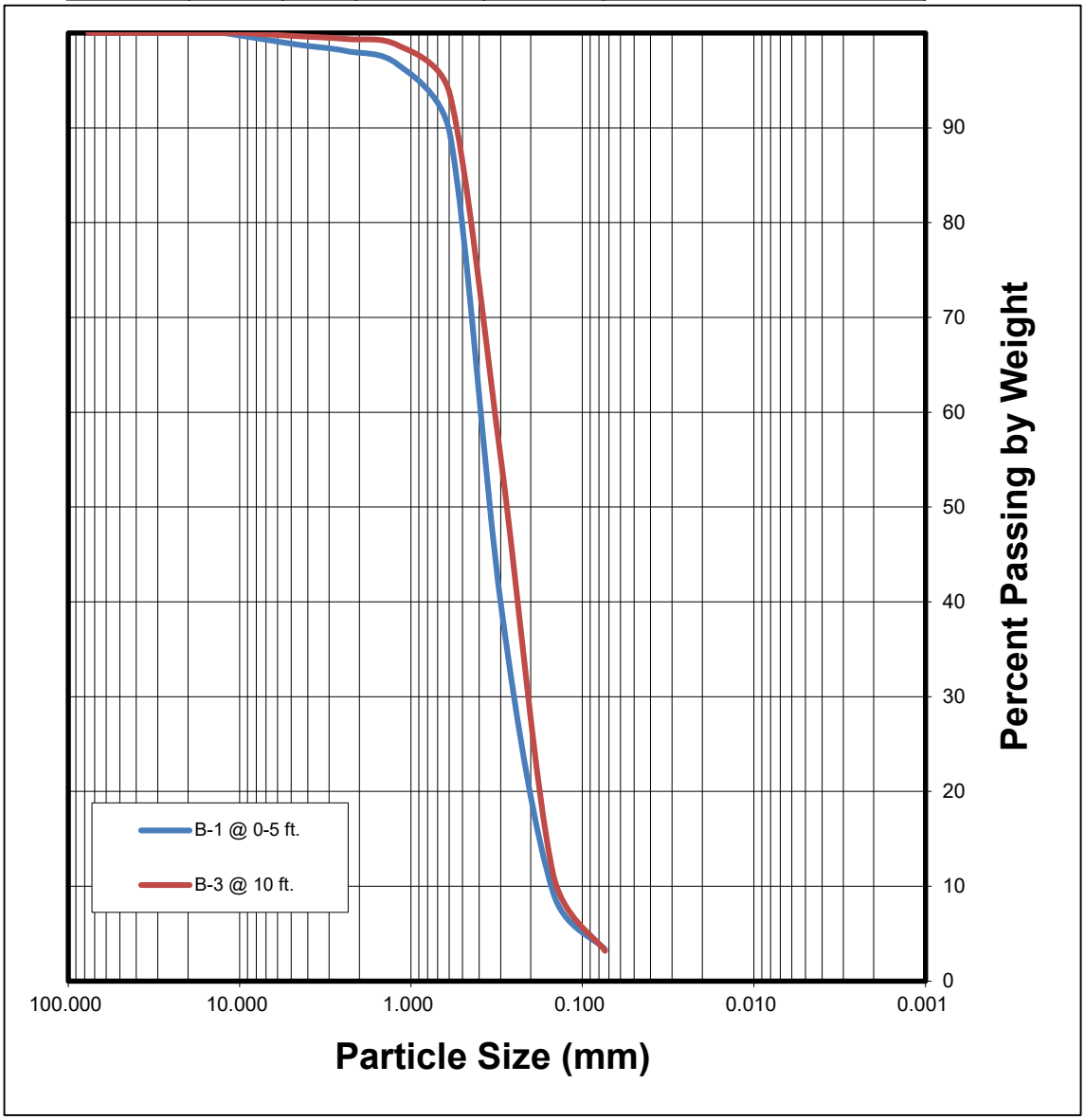
PROJECT No. LE20189

LANDMARK Geo-Engineers and Geologists

PLATE B-14

APPENDIX C

SIEVE ANALYSIS					HYDROMETER ANALYSIS
Gravel		Sand			Silt and Clay Fraction
Coarse	Fine	Coarse	Medium	Fine	



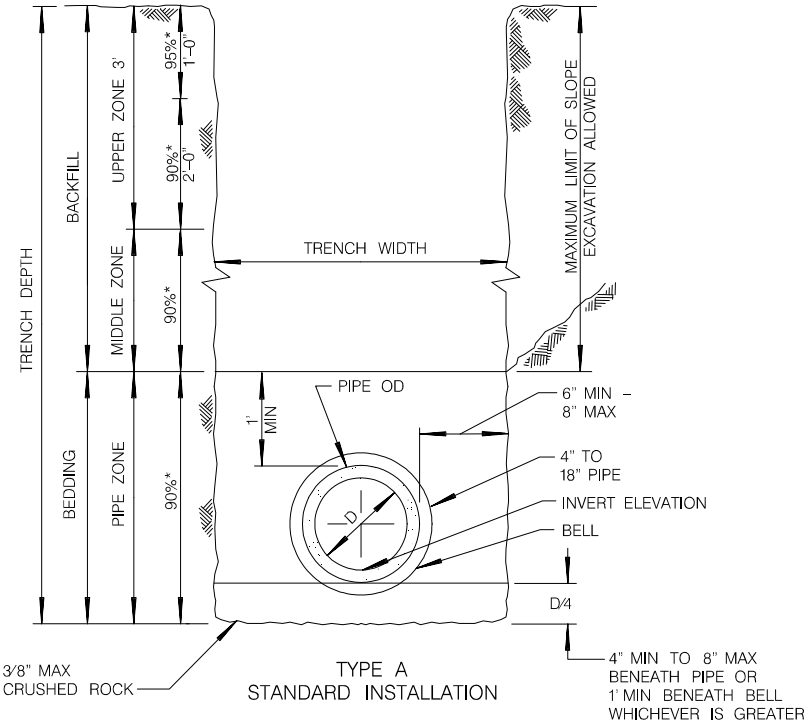
LANDMARK
Geo-Engineers and Geologists

Project No.: LE20189

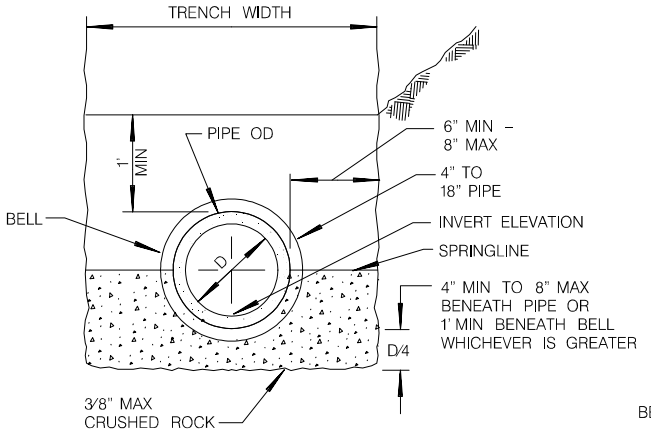
Grain Size Analysis

Plate C-1

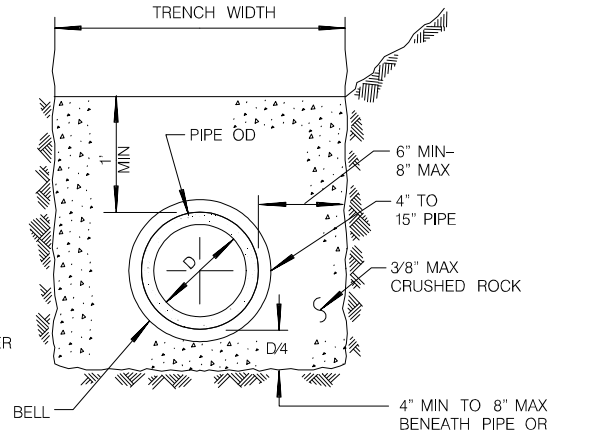
APPENDIX D



TYPE A
STANDARD INSTALLATION



TYPE B
ROCK TO SPRINGLINE



TYPE C
ROCK ENVELOPE

NOTES

1. FOR TRENCH RESURFACING IN IMPROVED STREETS, SEE STANDARD DRAWINGS SDG–107 AND SDG–108.
2. (*) INDICATES MINIMUM RELATIVE COMPACTION.
3. MINIMUM DEPTH OF COVER FROM THE TOP OF PIPE TO FINISH GRADE FOR PVC SDR 35 SEWER MAIN SHALL BE 5'. FOR SHALLOWER DEPTH, SPECIAL DESIGN IS REQUIRED. SEE SDS–101.
4. SEE TYPE A INSTALLATION FOR DETAILS NOT SHOWN FOR TYPES B AND C.
5. FOR PIPE SIZE ENCASEMENT LARGER THAN 15", MAXIMUM SIDE WALL CLEARANCE SHALL BE 12" OR AS SHOWN ON THE PLANS.
6. 6" METAL TAPE SHALL BE INSTALLED ABOVE PIPE 4" BELOW TRENCH CAP AND 12" BELOW FINISH GRADE IN UNIMPROVED STREETS.
7. 1' SAND CUSHION OR A 6" MINIMUM SAND CUSHION WITH 1" NEOPRENE PAD SHALL BE PLACED FOR CROSSINGS UTILITIES WHEN VERTICAL CLEARANCE IS 1' OR LESS. THE NEOPRENE PAD SHALL BE PLACED ON THE MOST FRAGILE UTILITY.

From: City of San Diego Standard Drawing SDS-110 (2016)

LANDMARK Geo-Engineers and Geologists **Project No.: LE20189**	**Pipe Bedding and Trench Backfill Recommendations**	**Plate D-1**

APPENDIX E

VIKING SOLAR
SITE CORROSIVITY ASSESSMENT REPORT

Presented To:

Landmark Consultants

Prepared by:

R F Yeager
ENGINEERING

DECEMBER 9, 2020

INTRODUCTION

RFYeager Engineering has completed an electrical and thermal resistivity assessment for the Viking Solar Project (Project) located near Holtville, California. The electrical resistivity assessment was conducted in the field. The thermal resistivity assessment was conducted at RFYeager Engineering's office on soil samples prepared by Landmark Consultants (Landmark). A chemical analysis of three (3) soil samples provided by Landmark was also conducted. The objective of this study is to determine the thermal and electrical resistivity, as well as to determine the corrosivity of the soil at the Project site.

The location and numbering of the assessment sites is shown in Figure 1 at the end of this report. Figure 1 is based upon the site map provided by Landmark.

SCOPE

The electrical resistivity of the soil was determined by using the Wenner 4 pin method in accordance with ASTM G57 standards. Six readings were obtained and recorded for each assessment site based upon pin spacings of 40, 20, 15, 10, 5, and 2.5 feet. Testing was conducted in both the north/south and east/west direction at each site (i.e. 12 readings per test site). Readings were recorded at three sites within the Project boundaries. All resistivity readings were recorded utilizing a Soil Resistance Meter (Megger Model DET4T2).

The soil corrosivity was evaluated based on the results of the field soil electrical resistivity assessment and the chemical analyses of the three soil samples. The soil samples were obtained by Landmark from depths ranging between zero and six feet. The samples were analyzed for pH, soluble salts (chlorides and sulfates) as well as resistivity (in the as-received and saturated condition).

The thermal resistivity was determined using a Decagon KD2 Pro Portable Thermal Properties Analyzer (KD2 Pro) outfitted with the 100 mm long, 2.4 mm diameter TR-1 sensor. The KD2 Pro works in accordance with ASTM D5334-08 using a transient heat method. Soil samples from three locations were tested. The samples, as prepared by Landmark per ASTM D1557, were tested in a 2.50 inch diameter by 6.75 inch deep holder.

CONCLUSIONS

The following are significant conclusions resulting from this assessment:

1. The results of the field electrical resistivity assessment are provided in Table 1 below. Resistivity readings between each assessment location were varied. The readings from Sites No. 1 and No. 2 (located in previously tilled soil at the south central and northeast region of the Project site, respectively) were relatively low, ranging between 996 ohm-cm and 28,246 ohm-cm. The readings Test No. 3 (located near the western edge of the site in native undisturbed soil) were much higher, ranging from 6,599 ohm-cm to 90,005 ohm-cm. It is noted that the dry, loose soil conditions at all locations made it challenging to obtain accurate field data. Large amounts of water had to be poured at each pin location in order to achieve adequate electrical contact with the earth.

Table 1 – Viking Solar Site
Electrical Resistivity Data
Prepared by: RFYeager Engineering
Test Date: 10.19.2020

Test No.	Assessment Site ID	Soil Resistivity (Ohm-cm)					
		Ave. Soil Depth (feet)					
		40	20	15	10	5	2.5
1	Site 1 (N/S orientation)	996	1302	3160	9575	9575	18671
2	Site 1 (E/W orientation)	2221	1838	3447	6128	7660	13884
3	Site 2 (N/S orientation)	2528	2375	4022	17235	19150	28246
4	Site 2 (E/W orientation)	3294	3370	4912	11490	17235	15799
5	Site 3 (N/S orientation)	6511	17695	20108	32747	47205	65876
6	Site 3 (E/W orientation)	8426	26044	32172	67025	65110	90005

1 - See Figure 1 for soil assessment location relative to project site

2. The chemical analysis results were also varied (see Table 2 on the following page). Samples B-1 and B-2 (located in the south central and northeast regions of the Project site, respectively) had relatively low saturated soil resistivities (970 ohm-cm and 1,600 ohm-cm, respectively). The saturated resistivity of the B-3 soil sample, from the western side of the Project site, was much higher at 6,200 ohm-cm.

3. Soil sample B-3 had the lowest soluble salt concentrations. However, none of the three samples exhibited high concentrations of chlorides (i.e. greater than 300 ppm) or sulfates (i.e. greater than 1,000 ppm). The pH readings for all soil samples are indicative of slightly alkaline soil conditions.

Table 2 – Viking Solar Site Chemical Analysis Data Prepared by: RFYeager Engineering				
Sample ID[1] (Depth)	**Min. Soil Box Resistivity - CalTest 643 (ohm-cm)**	**Chloride Concentration - CalTest 422 (ppm)**	**Sulfate Concentration - CalTest 417 (ppm)**	**pH CalTest 643**
B-1 (5 ft.)	970	170	390	8.0
B-2 (0-3 ft.)	1,600	50	250	8.7
B-3 (5-6 ft.)	6,200	30	40	9.2

1 - See Figure 1 for soil sample location.

4. It is noted that the saturated soil box resistivities measured on the three soil samples are lower than the Wenner 4-pin resistivities recorded in the field. This is likely due to the relatively dry soil conditions at the project site during the field assessment. The dryer the soil, the lesser the impact soluble soil salts have on resistivity. The saturated (minimum) soil box measurements represent the lowest, most corrosive conditions whereby the soils become fully saturated and have the lowest resistivity.

5. The results of the field electrical resistivity assessment and soil sample analysis at the Project site indicate varying levels of soil corrosivity. The soil in the western side of the project site in the vicinity of the electrical resistivity assessment Site 3 is less corrosive to buried metallic structures compared to the soil in the south central and northeast regions of the project site (assessment Sites 1 and 2). However, for all locations, the soil is considered aggressive enough to initiate and support the corrosion of buried metallic utilities. Accordingly, supplemental corrosion control measures are recommended in order to prevent premature failures. These measures include the application of exterior coatings on buried utilities, as well as cathodic protection in the more corrosive areas.

6. The soil thermal resistivity is provided in Table 3 on the following page. The corresponding Time vs. Temperature graphs for each soil sample is provided in Appendix A.

Table 3 – Viking Solar **Thermal Resistivity Data** Prepared by: RFYeager Engineering	
Sample ID[1]	**Thermal Resistivity[2] ($m\ ^0CW^{-1}$)**
B-1	3.77
B-2	3.86
B-3	2.89

1 - See Figure 1 for sample location relative to project site
2 – ASTM D5334-08.

DISCUSSION

Electrical Resistivity Assessment

Soil electrical resistivity (inverse of conductivity) measures the ability of an electrolyte (soil) to support electrical current flow. The most common method of measuring soil electrical resistivity is the Wenner 4-Pin Method which uses four pins (electrodes) that are driven into the earth, equally spaced apart in a straight line. The Wenner 4-pin Method provides an average resistivity of a hemisphere (essentially) of soil whose diameter is approximately equal to the pin spacing. For example, the electrical resistivity value obtained with the pins spaced at 5 feet apart is the average resistivity of a hemisphere of soil from the surface to a depth of 2.5 feet. By taking readings at different pin spacings (or depths), average soil electrical resistivity conditions can be obtained within areas at, above, and below trench zones.

Corrosion versus Resistivity

Corrosion is an electrochemical process, whereby the reaction rate is largely dependent upon the electrical conductivity of the surrounding electrolyte. Accordingly, the lower the electrical resistivity, then the greater the current flow and the greater the corrosion rate assuming all other factors are equal.

One common relationship between corrosivity and soil electrical resistivity used by corrosion engineers is provided on the following page.

Corrosivity	Electrical Resistivity
Very Corrosive	0-1000 ohm-cm
Corrosive	1001-2000 ohm-cm
Fairly Corrosive	2001-5000 ohm-cm
Moderately Corrosive	5001-12000 ohm-cm
Slightly Corrosive	12001-30000 ohm-cm
Relatively Non-Corrosive	Greater than 30001 ohm-cm

Thermal Resistivity Assessment

Thermal resistivity was measured on soil samples from three locations at the Project site. The samples were obtained by Landmark from a depth range of zero to five feet. For each sample, the thermal resistivity was measured two times with the average provided in Table 3. The assessment was conducted in general accordance with the standard method ASTM D5334-08 which calculates thermal resistivity by monitoring the dissipation of heat from a line heat source. The assessment consists of inserting a thermal sensor into the soil with a known current and voltage applied. The corresponding temperature rise in the soil over a period of time is recorded. The thermal resistivity is obtained from an analysis of the time series temperature data during the heating and cooling cycle of the sensor.

For purposes of this report, the thermal resistivity values are provided as "data only" in order to assist others in the project design.

Thank you for this opportunity to provide these corrosion engineering services. Please contact me if you have any questions.

Randy J. Geving, PE
Registered Professional Engineer – Corrosion No.1060
RGeving@RFYeager.com, 760.715.2358

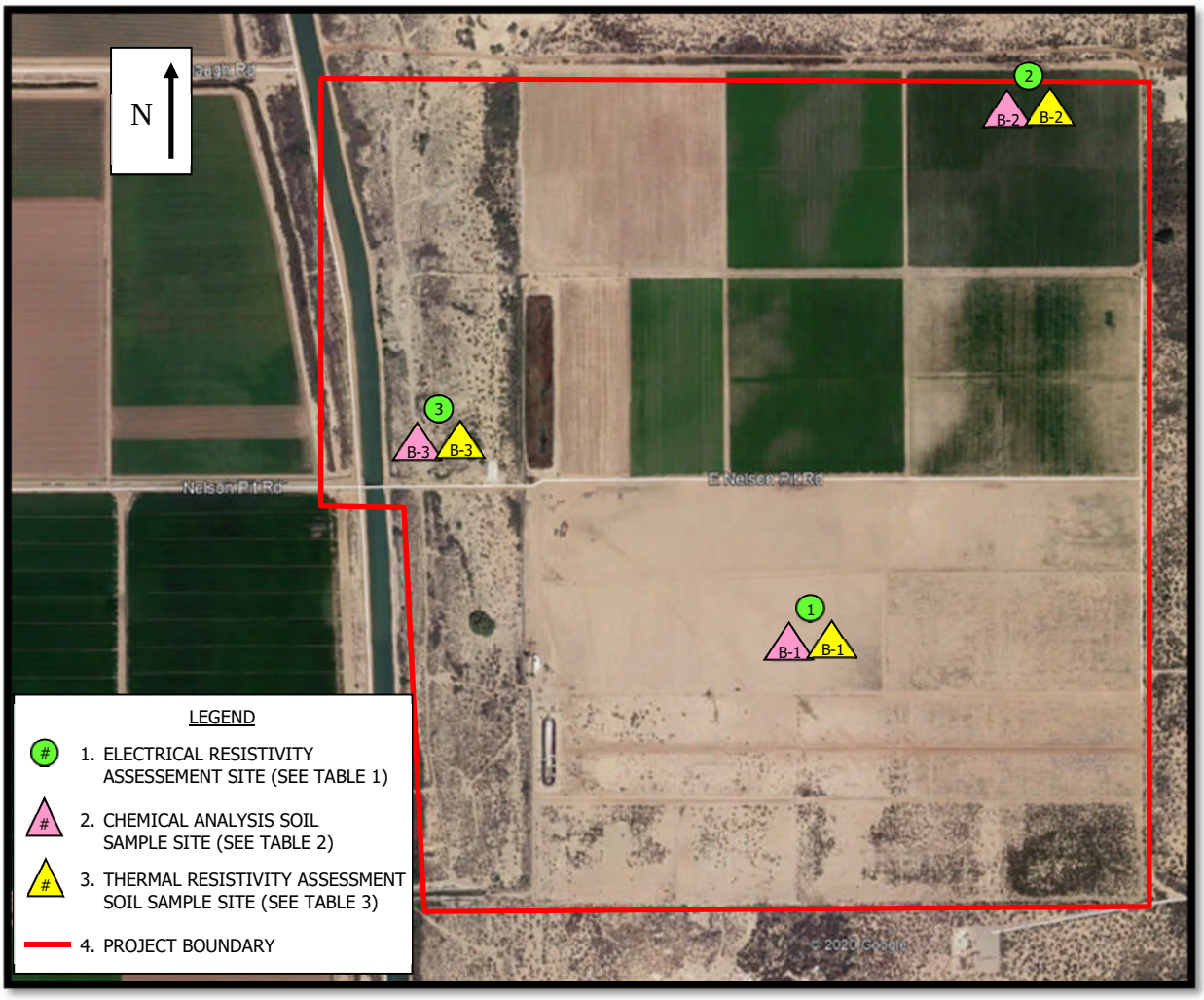


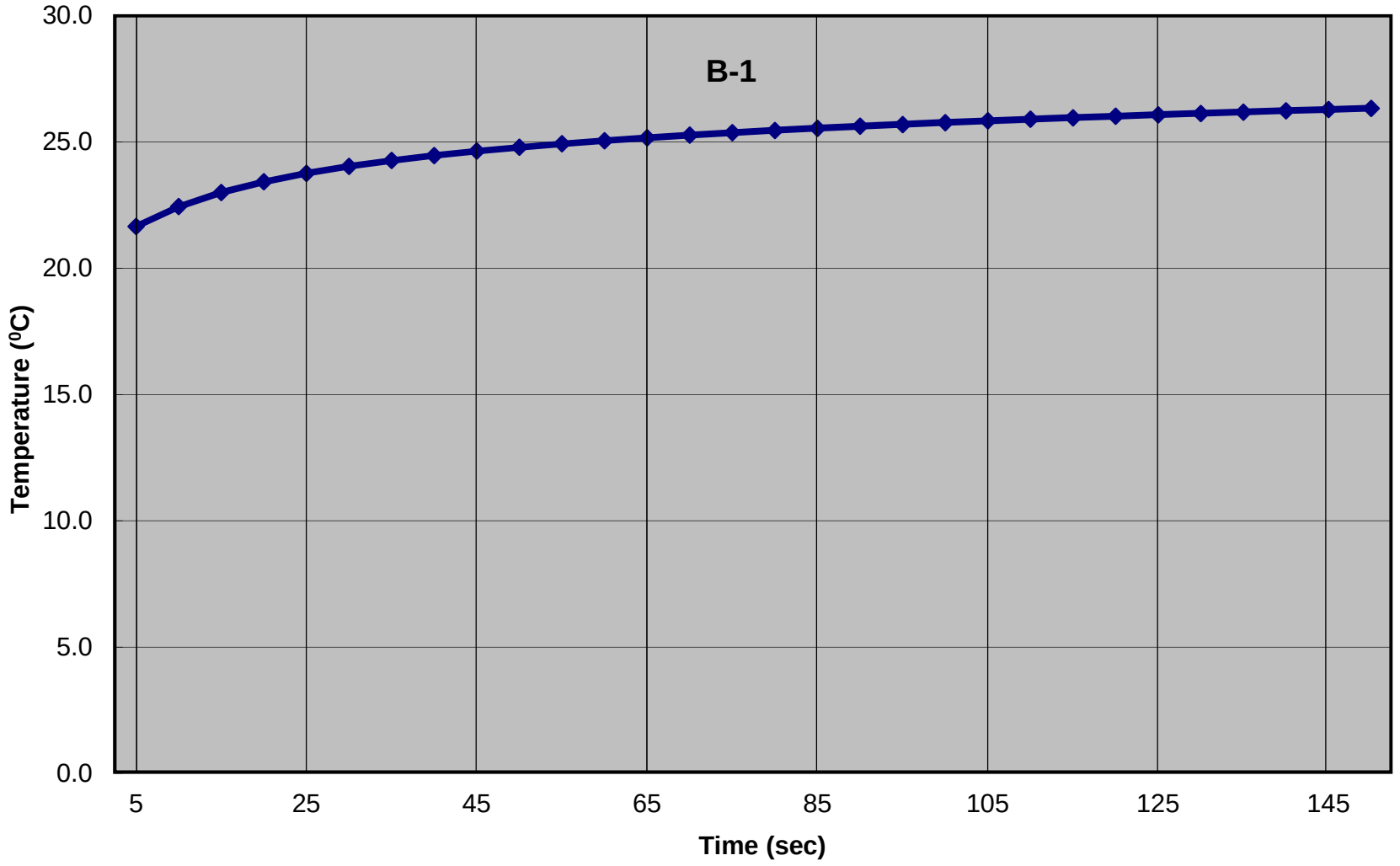
Figure 1 – Viking Solar Project Site Assessment Locations

APPENDIX A

THERMAL RESISTIVITY

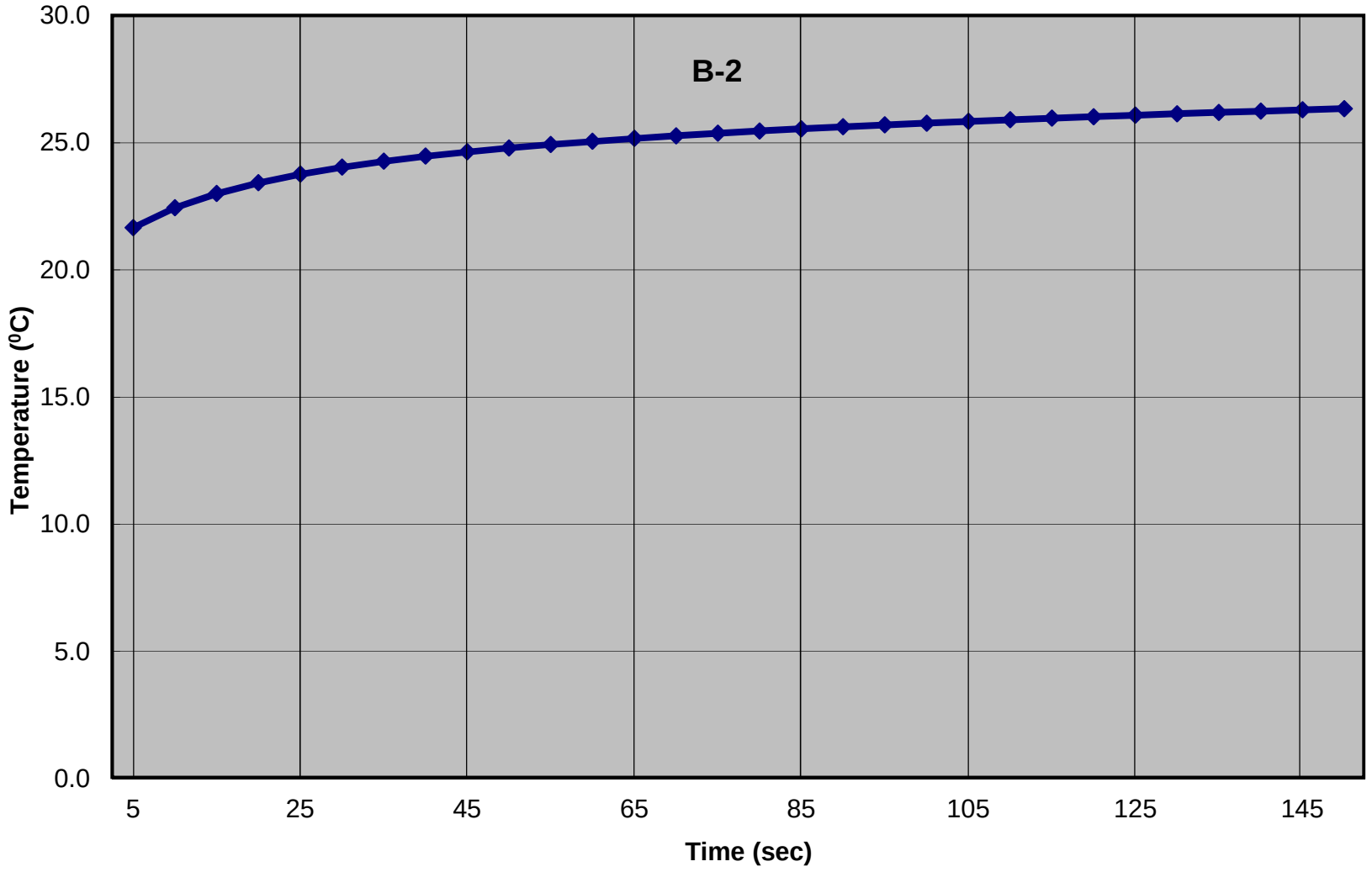
TEMPERATURE VS. TIME GRAPHS

Viking Solar
Thermal Resistivity Temperature vs. Time Graph
Test Date: November 30, 2020



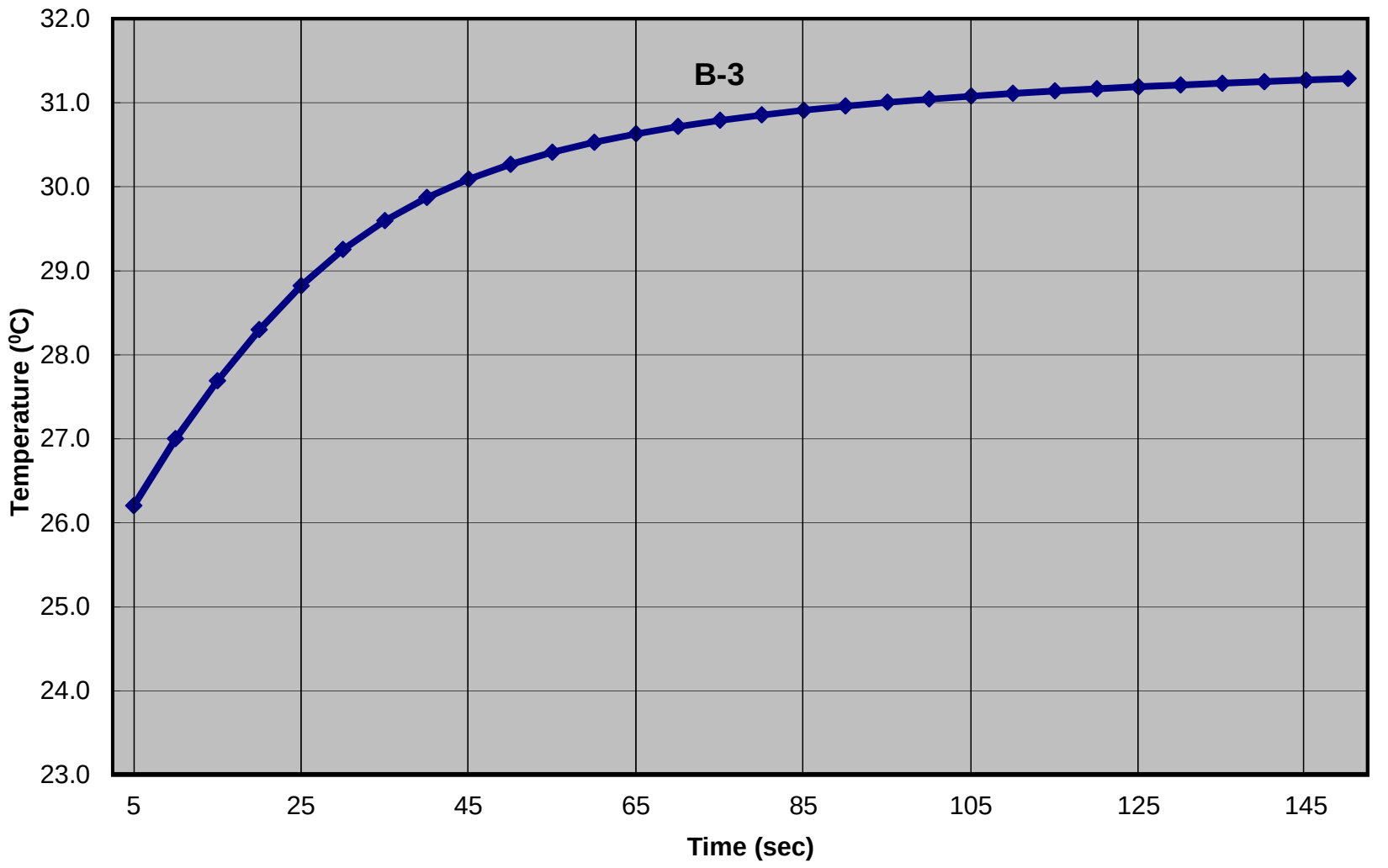
RFYeager Engineering

Viking Solar
Thermal Resistivity Temperature vs. Time Graph
Test Date: November 30, 2020



RFYeager Engineering

Viking Solar
Thermal Resistivity Temperature vs. Time Graph
Test Date: November 30, 2020



RFYeager Engineering

Landmark Consultants, Inc.
780 N. 4th Street
El Centro, CA 92243

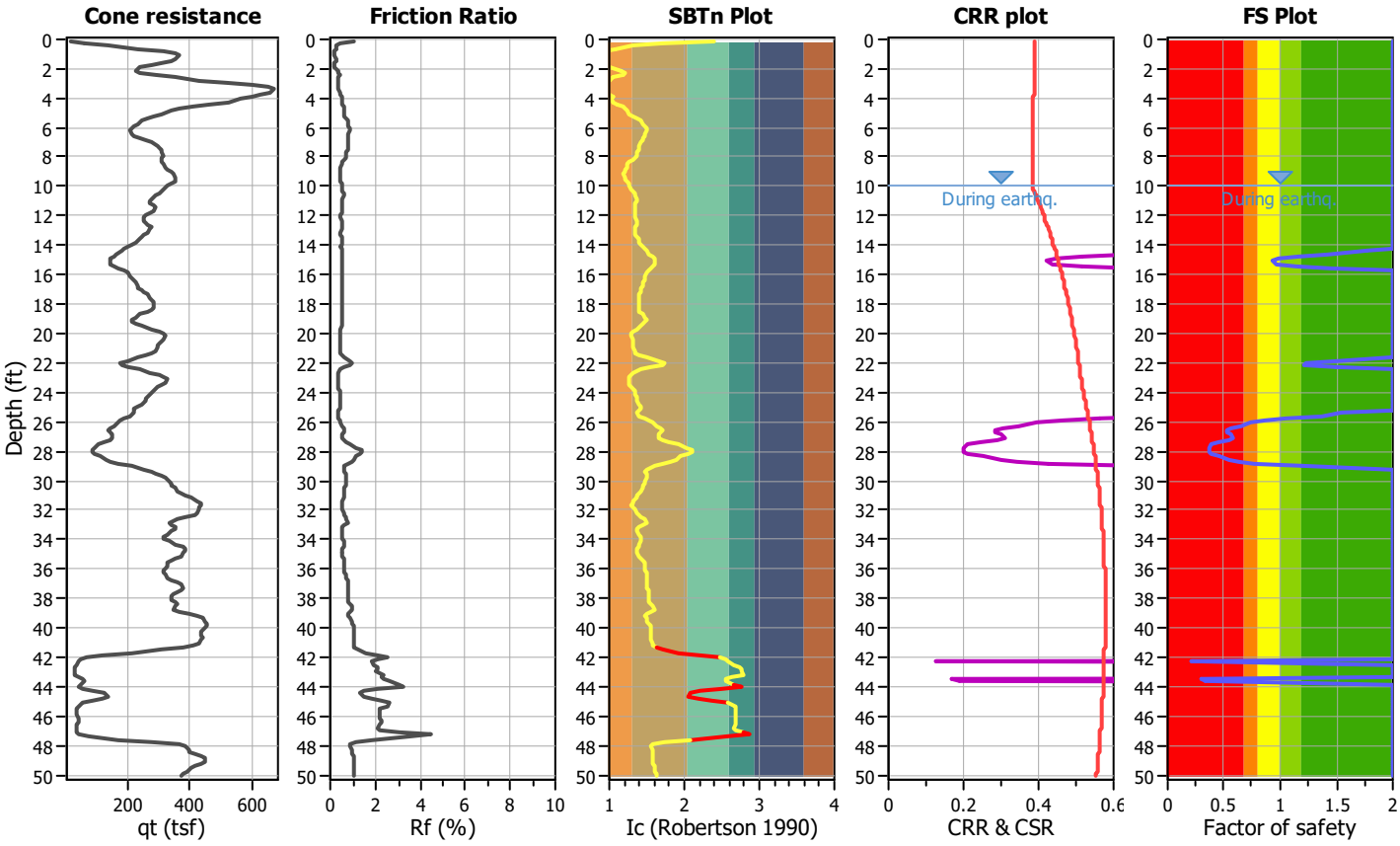
LIQUEFACTION ANALYSIS REPORT

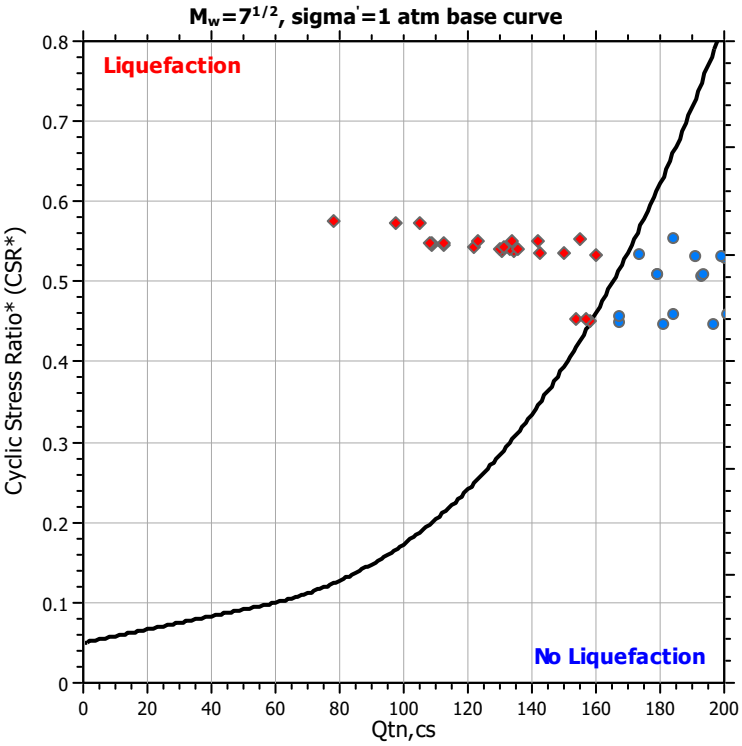
Project title : Vikings Solar Project **Location : Holtville, CA**

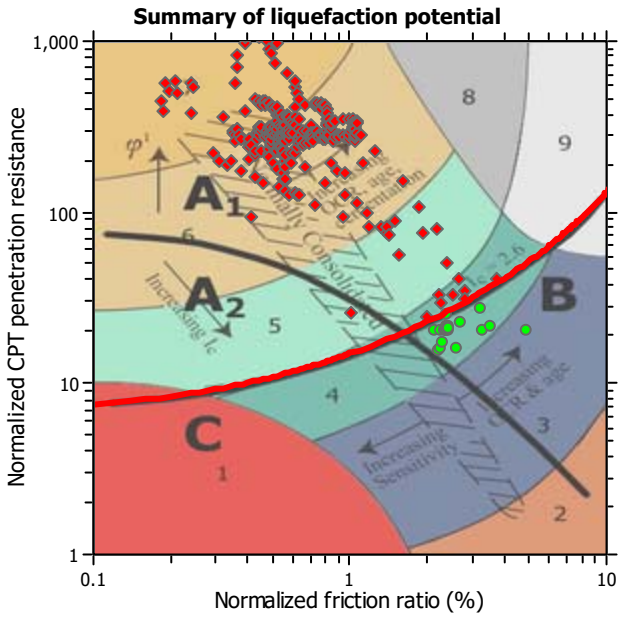
CPT file : CPT-11

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	10.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	10.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.55	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

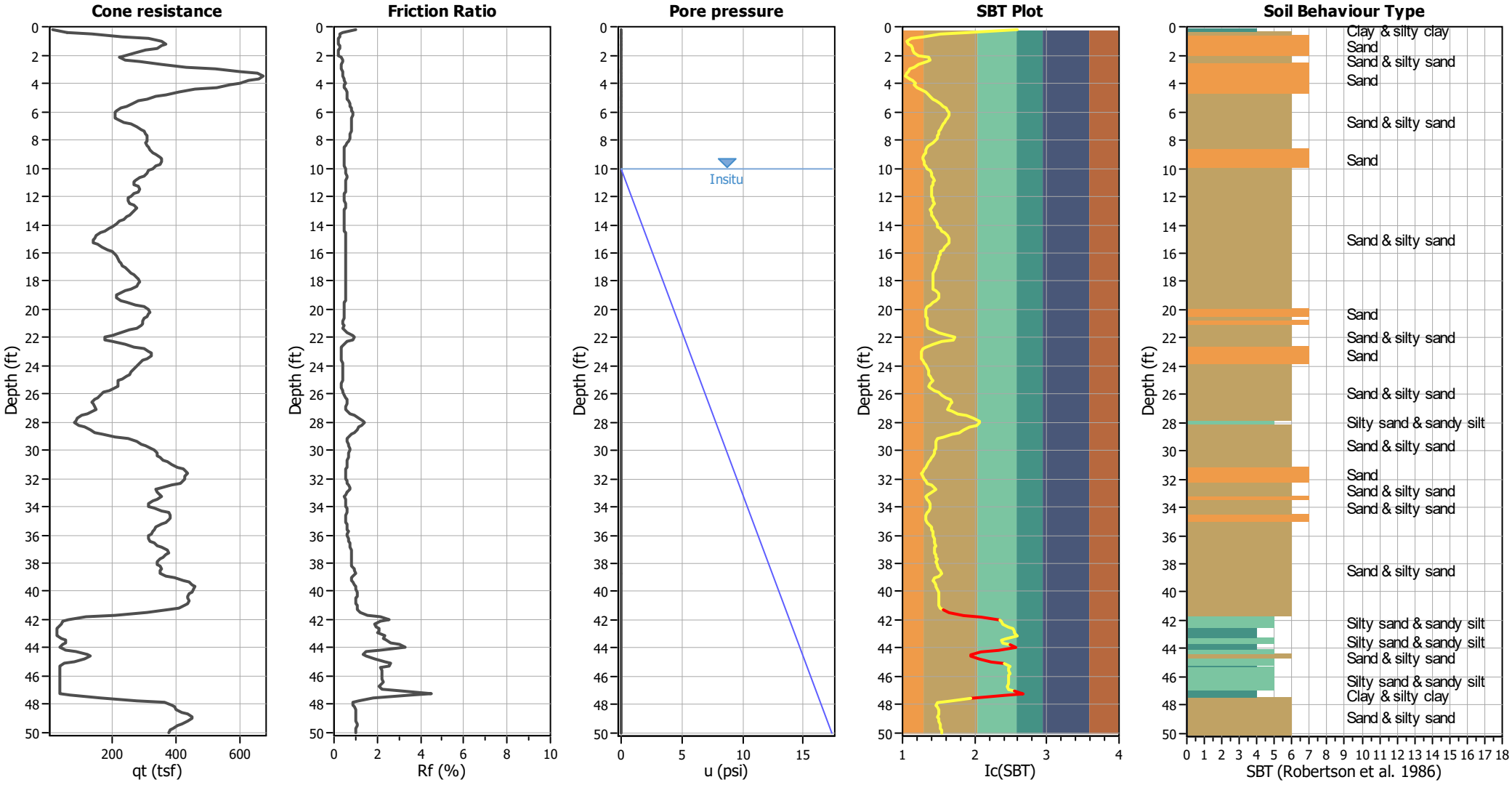






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



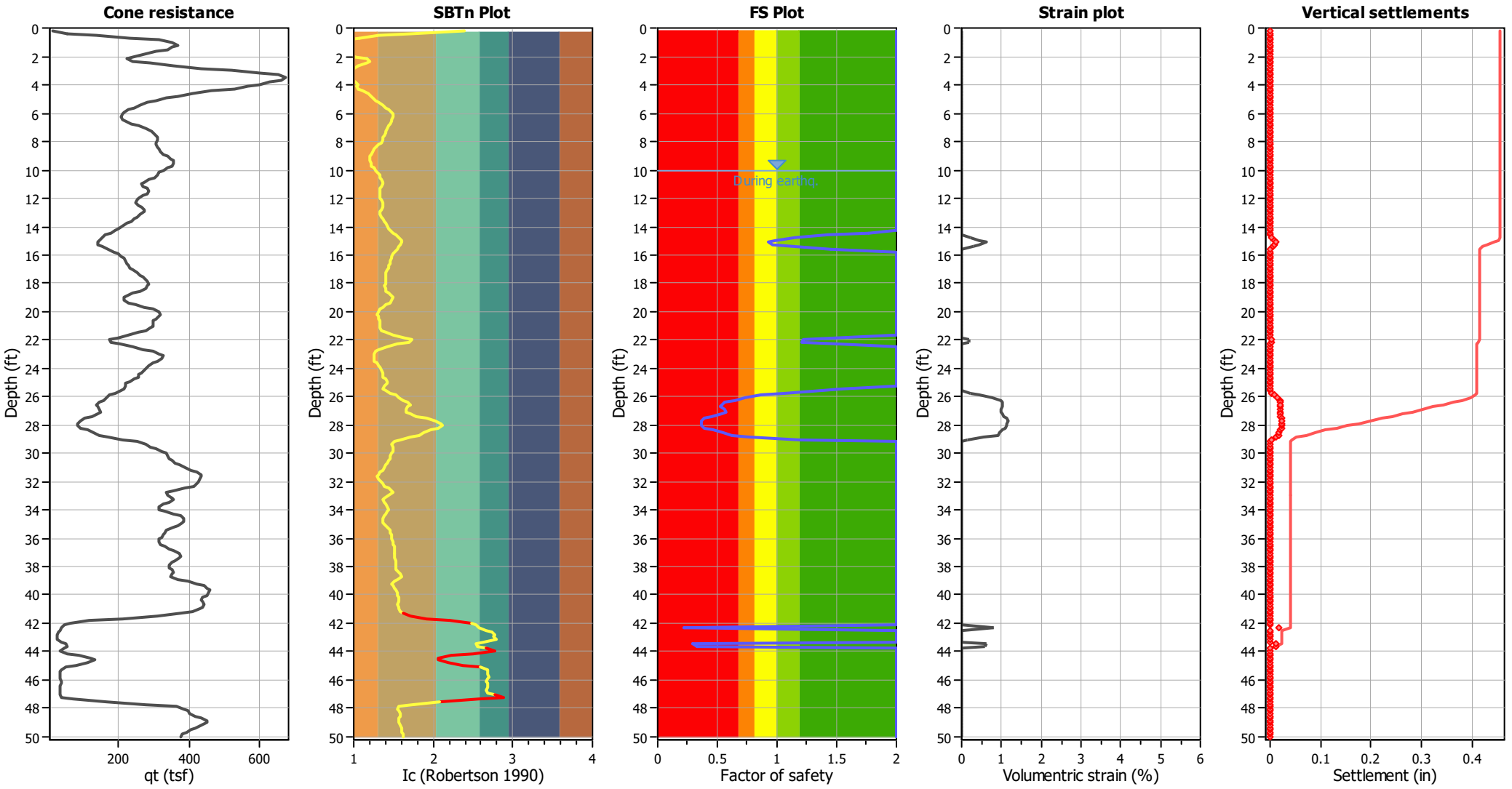
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	10.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	10.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

APPENDIX F

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
10.01	397.58	2.00	0.00	0.83	0.00	10.17	382.35	2.00	0.00	0.83	0.00
10.33	373.63	2.00	0.00	0.82	0.00	10.50	363.72	2.00	0.00	0.82	0.00
10.66	345.69	2.00	0.00	0.82	0.00	10.83	326.92	2.00	0.00	0.82	0.00
10.99	317.97	2.00	0.00	0.81	0.00	11.15	321.45	2.00	0.00	0.81	0.00
11.32	332.03	2.00	0.00	0.81	0.00	11.48	337.63	2.00	0.00	0.81	0.00
11.65	330.62	2.00	0.00	0.80	0.00	11.81	316.26	2.00	0.00	0.80	0.00
11.98	301.31	2.00	0.00	0.80	0.00	12.14	292.79	2.00	0.00	0.79	0.00
12.30	289.57	2.00	0.00	0.79	0.00	12.47	294.16	2.00	0.00	0.79	0.00
12.63	305.65	2.00	0.00	0.79	0.00	12.80	314.97	2.00	0.00	0.78	0.00
12.96	310.93	2.00	0.00	0.78	0.00	13.12	298.33	2.00	0.00	0.78	0.00
13.29	286.06	2.00	0.00	0.77	0.00	13.45	276.33	2.00	0.00	0.77	0.00
13.62	265.67	2.00	0.00	0.77	0.00	13.78	251.41	2.00	0.00	0.77	0.00
13.94	237.39	2.00	0.00	0.76	0.00	14.11	224.26	2.00	0.00	0.76	0.00
14.27	210.86	2.00	0.00	0.76	0.00	14.44	196.57	1.77	0.00	0.76	0.00
14.60	181.43	1.42	0.00	0.75	0.00	14.76	167.51	1.15	0.21	0.75	0.00
14.93	158.02	0.99	0.43	0.75	0.01	15.09	153.81	0.92	0.62	0.74	0.01
15.26	156.75	0.96	0.43	0.74	0.01	15.42	167.67	1.14	0.29	0.74	0.01
15.58	184.42	1.45	0.00	0.74	0.00	15.75	201.49	2.00	0.00	0.73	0.00
15.91	214.03	2.00	0.00	0.73	0.00	16.08	222.65	2.00	0.00	0.73	0.00
16.24	228.75	2.00	0.00	0.72	0.00	16.40	234.27	2.00	0.00	0.72	0.00
16.57	238.47	2.00	0.00	0.72	0.00	16.73	242.38	2.00	0.00	0.72	0.00
16.90	246.82	2.00	0.00	0.71	0.00	17.06	254.44	2.00	0.00	0.71	0.00
17.22	264.11	2.00	0.00	0.71	0.00	17.39	273.11	2.00	0.00	0.71	0.00
17.55	280.06	2.00	0.00	0.70	0.00	17.72	286.24	2.00	0.00	0.70	0.00
17.88	291.00	2.00	0.00	0.70	0.00	18.04	293.67	2.00	0.00	0.69	0.00
18.21	291.83	2.00	0.00	0.69	0.00	18.37	283.03	2.00	0.00	0.69	0.00
18.54	266.45	2.00	0.00	0.69	0.00	18.70	244.76	2.00	0.00	0.68	0.00
18.86	226.90	2.00	0.00	0.68	0.00	19.03	217.32	2.00	0.00	0.68	0.00
19.19	218.19	2.00	0.00	0.67	0.00	19.36	228.27	2.00	0.00	0.67	0.00
19.52	248.90	2.00	0.00	0.67	0.00	19.69	275.29	2.00	0.00	0.67	0.00
19.85	299.05	2.00	0.00	0.66	0.00	20.01	313.89	2.00	0.00	0.66	0.00
20.18	318.03	2.00	0.00	0.66	0.00	20.34	313.23	2.00	0.00	0.66	0.00
20.51	303.97	2.00	0.00	0.65	0.00	20.67	295.26	2.00	0.00	0.65	0.00
20.83	292.66	2.00	0.00	0.65	0.00	21.00	290.68	2.00	0.00	0.64	0.00
21.16	283.60	2.00	0.00	0.64	0.00	21.33	269.56	2.00	0.00	0.64	0.00
21.49	249.36	2.00	0.00	0.64	0.00	21.65	222.93	2.00	0.00	0.63	0.00
21.82	193.30	1.48	0.00	0.63	0.00	21.98	179.65	1.22	0.17	0.63	0.00
22.15	179.23	1.21	0.17	0.62	0.00	22.31	193.74	1.48	0.00	0.62	0.00
22.47	229.32	2.00	0.00	0.62	0.00	22.64	258.46	2.00	0.00	0.62	0.00
22.80	285.08	2.00	0.00	0.61	0.00	22.97	299.52	2.00	0.00	0.61	0.00
23.13	308.23	2.00	0.00	0.61	0.00	23.29	304.69	2.00	0.00	0.61	0.00
23.46	293.20	2.00	0.00	0.60	0.00	23.62	279.11	2.00	0.00	0.60	0.00
23.79	269.62	2.00	0.00	0.60	0.00	23.95	265.05	2.00	0.00	0.59	0.00
24.11	253.77	2.00	0.00	0.59	0.00	24.28	247.18	2.00	0.00	0.59	0.00
24.44	239.42	2.00	0.00	0.59	0.00	24.61	238.43	2.00	0.00	0.58	0.00
24.77	227.65	2.00	0.00	0.58	0.00	24.93	214.60	2.00	0.00	0.58	0.00
25.10	202.86	2.00	0.00	0.57	0.00	25.26	200.71	2.00	0.00	0.57	0.00
25.43	199.52	1.54	0.00	0.57	0.00	25.59	191.41	1.38	0.00	0.57	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
25.75	173.48	1.06	0.22	0.56	0.00	25.92	160.02	0.86	0.44	0.56	0.01
26.08	149.88	0.73	0.77	0.56	0.02	26.25	142.36	0.65	0.97	0.56	0.02
26.41	134.21	0.57	1.01	0.55	0.02	26.57	130.41	0.53	1.03	0.55	0.02
26.74	130.14	0.53	1.03	0.55	0.02	26.90	133.32	0.56	1.00	0.54	0.02
27.07	135.45	0.57	0.99	0.54	0.02	27.23	131.35	0.54	1.01	0.54	0.02
27.40	121.72	0.46	1.07	0.54	0.02	27.56	112.41	0.39	1.13	0.53	0.02
27.72	108.61	0.36	1.16	0.53	0.02	27.89	108.69	0.36	1.15	0.53	0.02
28.05	108.16	0.36	1.15	0.52	0.02	28.22	112.60	0.39	1.11	0.52	0.02
28.38	123.04	0.46	1.02	0.52	0.02	28.54	133.66	0.55	0.95	0.52	0.02
28.71	141.62	0.62	0.90	0.51	0.02	28.87	155.03	0.77	0.55	0.51	0.01
29.04	184.17	1.19	0.13	0.51	0.00	29.20	219.50	2.00	0.00	0.51	0.00
29.36	242.60	2.00	0.00	0.50	0.00	29.53	253.46	2.00	0.00	0.50	0.00
29.69	265.84	2.00	0.00	0.50	0.00	29.86	278.61	2.00	0.00	0.49	0.00
30.02	288.59	2.00	0.00	0.49	0.00	30.18	292.36	2.00	0.00	0.49	0.00
30.35	294.62	2.00	0.00	0.49	0.00	30.51	300.50	2.00	0.00	0.48	0.00
30.68	309.31	2.00	0.00	0.48	0.00	30.84	319.60	2.00	0.00	0.48	0.00
31.00	330.32	2.00	0.00	0.47	0.00	31.17	344.23	2.00	0.00	0.47	0.00
31.33	358.18	2.00	0.00	0.47	0.00	31.50	367.45	2.00	0.00	0.47	0.00
31.66	368.44	2.00	0.00	0.46	0.00	31.82	361.97	2.00	0.00	0.46	0.00
31.99	359.31	2.00	0.00	0.46	0.00	32.15	355.69	2.00	0.00	0.46	0.00
32.32	347.23	2.00	0.00	0.45	0.00	32.48	324.00	2.00	0.00	0.45	0.00
32.64	297.62	2.00	0.00	0.45	0.00	32.81	279.99	2.00	0.00	0.44	0.00
32.97	282.62	2.00	0.00	0.44	0.00	33.14	290.70	2.00	0.00	0.44	0.00
33.30	294.22	2.00	0.00	0.44	0.00	33.46	282.47	2.00	0.00	0.43	0.00
33.63	269.24	2.00	0.00	0.43	0.00	33.79	259.73	2.00	0.00	0.43	0.00
33.96	259.22	2.00	0.00	0.42	0.00	34.12	271.50	2.00	0.00	0.42	0.00
34.28	289.60	2.00	0.00	0.42	0.00	34.45	306.60	2.00	0.00	0.42	0.00
34.61	311.97	2.00	0.00	0.41	0.00	34.78	311.17	2.00	0.00	0.41	0.00
34.94	307.24	2.00	0.00	0.41	0.00	35.10	299.44	2.00	0.00	0.41	0.00
35.27	286.93	2.00	0.00	0.40	0.00	35.43	271.86	2.00	0.00	0.40	0.00
35.60	265.67	2.00	0.00	0.40	0.00	35.76	261.99	2.00	0.00	0.39	0.00
35.93	258.96	2.00	0.00	0.39	0.00	36.09	251.69	2.00	0.00	0.39	0.00
36.25	249.55	2.00	0.00	0.39	0.00	36.42	254.64	2.00	0.00	0.38	0.00
36.58	262.80	2.00	0.00	0.38	0.00	36.75	272.11	2.00	0.00	0.38	0.00
36.91	282.69	2.00	0.00	0.37	0.00	37.07	293.37	2.00	0.00	0.37	0.00
37.24	296.63	2.00	0.00	0.37	0.00	37.40	291.64	2.00	0.00	0.37	0.00
37.57	282.49	2.00	0.00	0.36	0.00	37.73	274.33	2.00	0.00	0.36	0.00
37.89	268.39	2.00	0.00	0.36	0.00	38.06	267.40	2.00	0.00	0.35	0.00
38.22	274.91	2.00	0.00	0.35	0.00	38.39	277.73	2.00	0.00	0.35	0.00
38.55	273.37	2.00	0.00	0.35	0.00	38.71	270.87	2.00	0.00	0.34	0.00
38.88	283.80	2.00	0.00	0.34	0.00	39.04	306.80	2.00	0.00	0.34	0.00
39.21	325.70	2.00	0.00	0.34	0.00	39.37	340.12	2.00	0.00	0.33	0.00
39.53	347.41	2.00	0.00	0.33	0.00	39.70	351.48	2.00	0.00	0.33	0.00
39.86	348.69	2.00	0.00	0.32	0.00	40.03	343.37	2.00	0.00	0.32	0.00
40.19	334.95	2.00	0.00	0.32	0.00	40.35	330.99	2.00	0.00	0.32	0.00
40.52	331.52	2.00	0.00	0.31	0.00	40.68	334.01	2.00	0.00	0.31	0.00
40.85	331.80	2.00	0.00	0.31	0.00	41.01	324.61	2.00	0.00	0.30	0.00
41.17	309.72	2.00	0.00	0.30	0.00	41.34	284.70	2.00	0.00	0.30	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

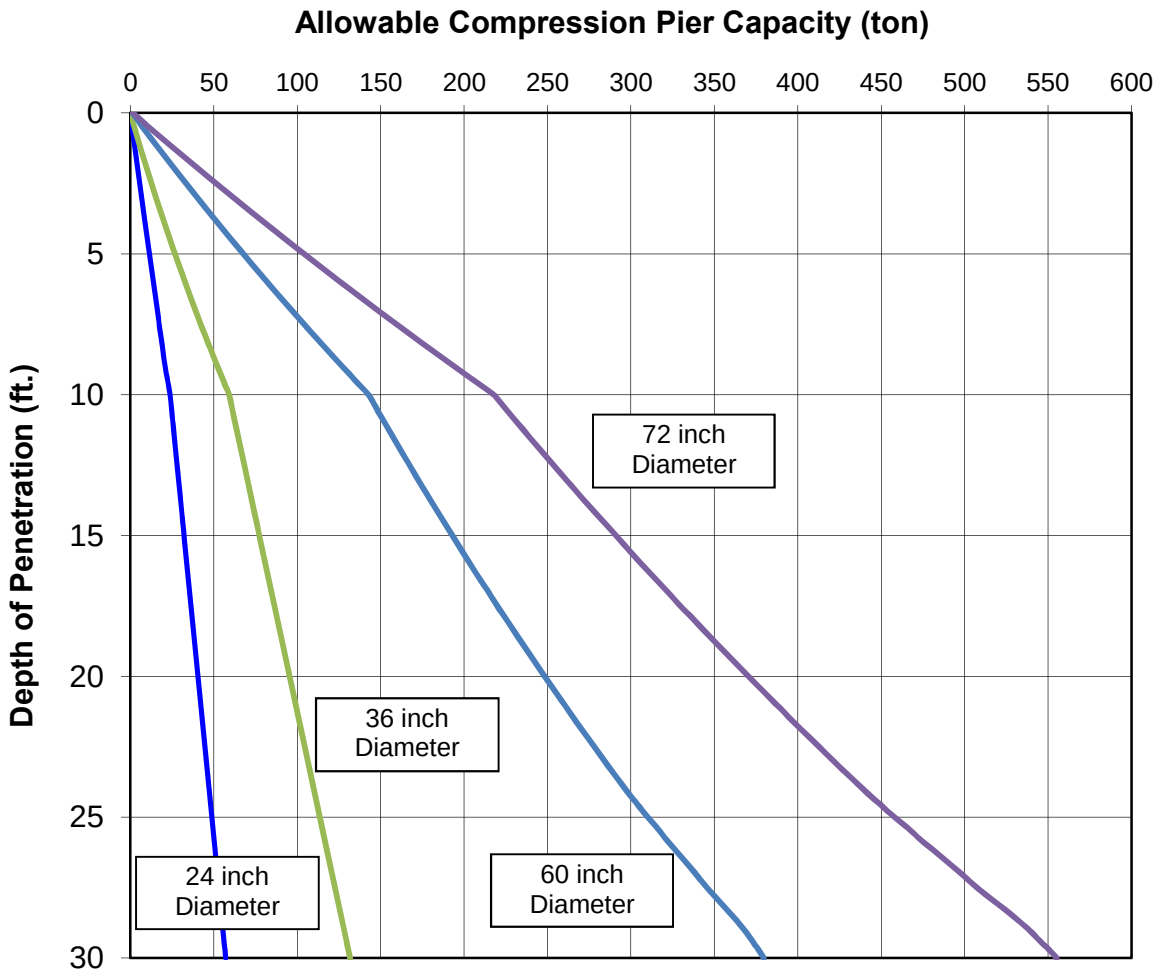
Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
41.50	240.80	2.00	0.00	0.30	0.00	41.67	182.06	2.00	0.00	0.29	0.00
41.83	134.59	2.00	0.00	0.29	0.00	41.99	108.92	2.00	0.00	0.29	0.00
42.16	89.18	2.00	0.00	0.29	0.00	42.32	78.43	0.22	0.81	0.28	0.02
42.49	75.53	2.00	0.00	0.28	0.00	42.65	73.72	2.00	0.00	0.28	0.00
42.81	71.11	2.00	0.00	0.27	0.00	42.98	69.85	2.00	0.00	0.27	0.00
43.14	76.03	2.00	0.00	0.27	0.00	43.31	85.87	2.00	0.00	0.27	0.00
43.47	97.76	0.29	0.63	0.26	0.01	43.64	104.87	0.33	0.59	0.26	0.01
43.80	103.13	2.00	0.00	0.26	0.00	43.96	97.98	2.00	0.00	0.25	0.00
44.13	92.22	2.00	0.00	0.25	0.00	44.29	97.28	2.00	0.00	0.25	0.00
44.46	115.04	2.00	0.00	0.25	0.00	44.62	124.84	2.00	0.00	0.24	0.00
44.78	123.15	2.00	0.00	0.24	0.00	44.95	114.30	2.00	0.00	0.24	0.00
45.11	101.19	2.00	0.00	0.24	0.00	45.28	88.14	2.00	0.00	0.23	0.00
45.44	79.05	2.00	0.00	0.23	0.00	45.60	78.98	2.00	0.00	0.23	0.00
45.77	79.79	2.00	0.00	0.22	0.00	45.93	80.72	2.00	0.00	0.22	0.00
46.10	81.04	2.00	0.00	0.22	0.00	46.26	81.29	2.00	0.00	0.22	0.00
46.42	81.05	2.00	0.00	0.21	0.00	46.59	79.65	2.00	0.00	0.21	0.00
46.75	77.69	2.00	0.00	0.21	0.00	46.92	79.38	2.00	0.00	0.20	0.00
47.08	92.66	2.00	0.00	0.20	0.00	47.24	112.99	2.00	0.00	0.20	0.00
47.41	131.27	2.00	0.00	0.20	0.00	47.57	150.18	2.00	0.00	0.19	0.00
47.74	205.20	2.00	0.00	0.19	0.00	47.90	258.58	2.00	0.00	0.19	0.00
48.06	274.26	2.00	0.00	0.19	0.00	48.23	279.86	2.00	0.00	0.18	0.00
48.39	282.68	2.00	0.00	0.18	0.00	48.56	294.75	2.00	0.00	0.18	0.00
48.72	307.21	2.00	0.00	0.17	0.00	48.88	318.09	2.00	0.00	0.17	0.00
49.05	316.02	2.00	0.00	0.17	0.00	49.21	305.95	2.00	0.00	0.17	0.00
49.38	293.90	2.00	0.00	0.16	0.00	49.54	283.26	2.00	0.00	0.16	0.00
49.70	274.36	2.00	0.00	0.16	0.00	49.87	265.90	2.00	0.00	0.15	0.00
50.03	261.21	2.00	0.00	0.15	0.00						

Total estimated settlement: 0.46

Abbreviations

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

APPENDIX G



Notes:

1. Compression load capacity are based on skin friction and end-bearing capacity. The structural capacity of the piers should be checked.

2. The indicated capacities are for sustained (dead plus live) vertical compression load, and include a factor of safety of at least 2.5

3. For temporary wind or seismic load, the above values may be increased by one-third.

4. Capacities of other pier sizes are in direct proportion to the pile diameter.

5. Pier capacity in tension should be taken as 50% of the compression capacity.

LANDMARK
Geo-Engineers and Geologists

Project No.: LE20189

Drlled Piers Compression Capacity Chart
CPT-11 Sounding
Viking Solar Project
Holtville, California

Plate
G-1

APPENDIX H

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KITTELSON & ASSOCIATES

VIKINGS SOLAR ENERGY STORAGE PROJECT TRANSPORTATION STUDY

January 29, 2021

Inside front cover

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Vikings Solar Energy Storage Project Transportation Study

Prepared for:
Vikings Energy Farm, LLC.

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Project Number 25871

January 29, 2021

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APPENDIX C: Synchro Report of Existing Plus Project Construction Conditions

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INTRODUCTION

Vikings Energy Farm LLC. (project sponsor) is proposing to develop the Vikings Solar Energy Storage (project), a nominal 150-megawatt alternating current (MWAC) solar photovoltaic (PV) energy generation project with an integrated 150 MW/600MWh battery storage project on approximately 603.61 acres of land in the county of Imperial, California. The project would be located on the intersection of Nelson Pit Road and Graeser Road. It is approximately 5.5 miles east of the city of Holtville. The project would be located on Imperial County Assessor's Parcel Numbers (APNs) 050-070-018-000 (approximately 480.00 acres), 050-070-019 (approximately 80.00 acres) and 050-070-021 (approximately 43.61 acres), owned by RL&R Strahm, ARB Inc., and the County of Imperial, respectively.

Two of the project area parcels are designated as "Agriculture" in the Imperial County General Plan and are zoned A-2-RE (General Agriculture with a Renewable Energy Overlay - areas that are suitable and intended primarily for agricultural uses [limited] and agricultural related compatible uses). The third project area parcel is designated as "Recreation/Open Space" and is zoned GS-RE (Government/Special Public Zone - areas that allow for the construction, development and operation of governmental facilities and special public facilities). The project site plan is showed in Figure 1.

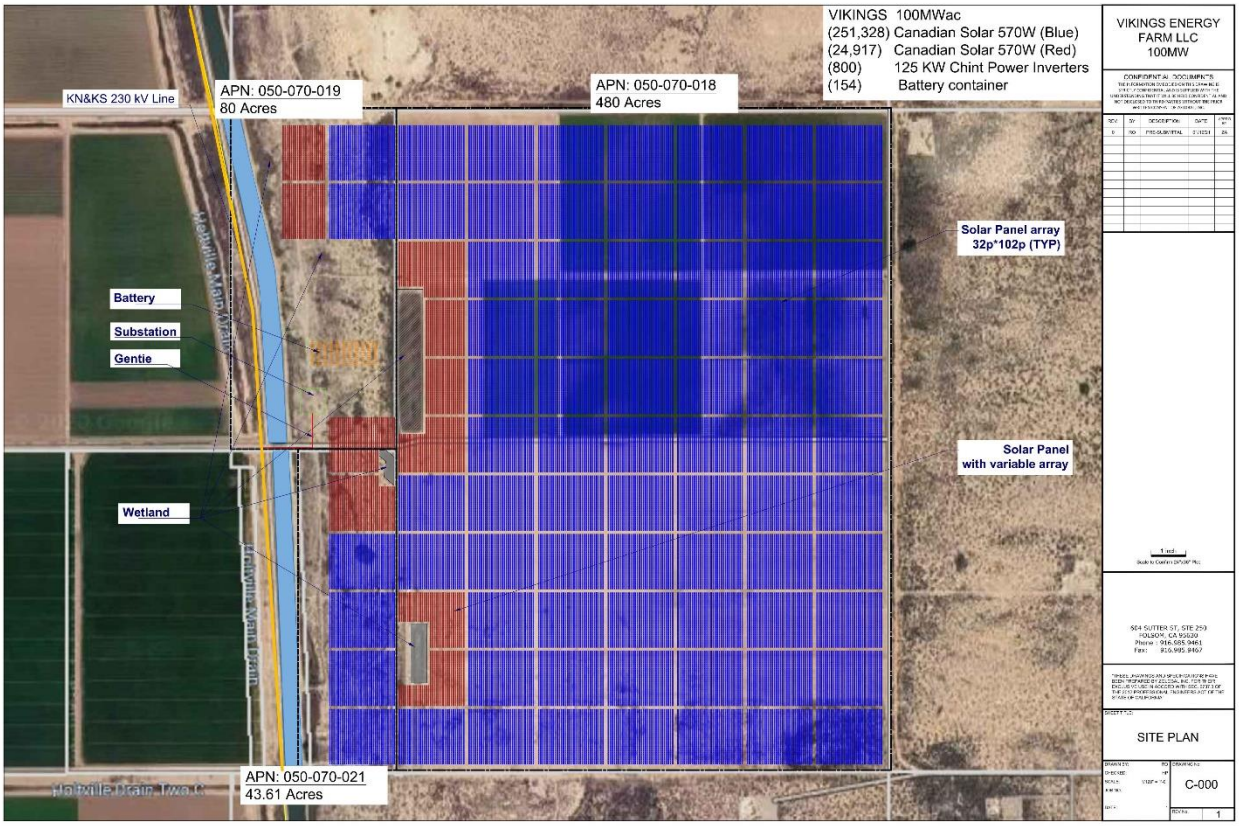
This report was prepared to evaluate potential transportation impacts and support environmental review for the Project, and includes the following:

- review of the existing circulation network and existing traffic conditions
- discussion of the applicable regulations
- estimate of vehicle trips to and from the site during construction and long-term operations
- Vehicle Miles Travelled (VMT) analysis

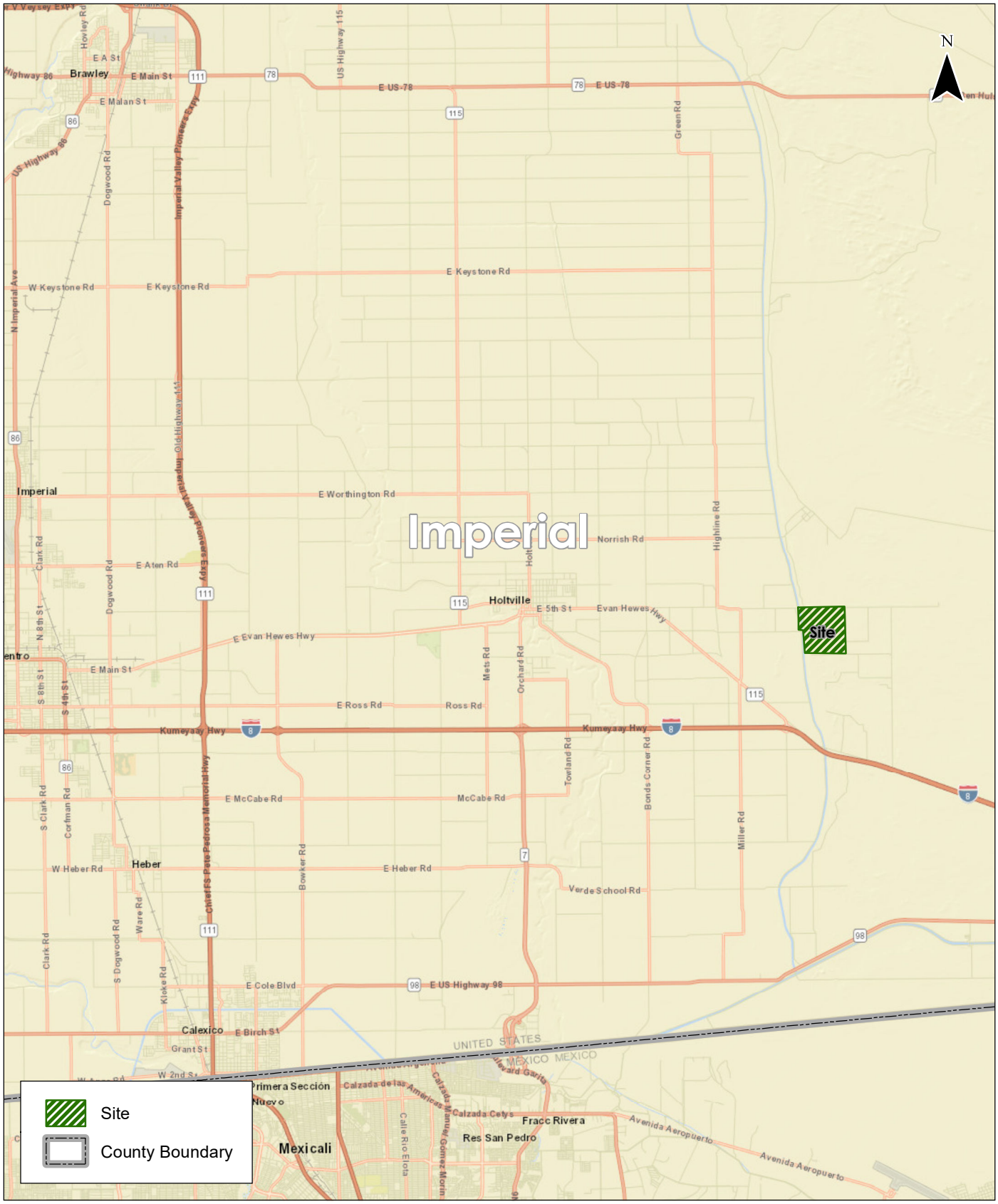
The study area and project site are shown in Figure 2. This transportation study is therefore subject to the regulations and standards currently in place in Imperial County. The analysis methodology and study locations included in this report were prepared according to the County's guidelines for the preparation of transportation analysis[1] and in consultation with County Transportation Public Works transportation staff.

[1] County of Imperial Department of Public Works Traffic Study and Report Policy dated March 12, 2007, revised June 29, 2007 and approved by the Board of Supervisors of the County of Imperial on August 7, 2007.

Figure 1: Site Plan



Source: ZGlobal Inc., 2020



Project Site

Figure 2

Coordinate System: NAD83 California zone 6 ftUS
Data Source: Delete if there isn't one.

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EXISTING CONDITIONS

This section discusses the existing conditions of roadways and study intersections near the project site.

ROADWAYS

The roadway system in the study area consists of interstate freeways, state routes and arterial, collector, and local roadways that serve local and regional traffic demand. The vehicular facilities in the study area are discussed below.

Interstate and State Roadways

Interstate 8 is the primary east-west route through Imperial County, running from San Diego, California to Arizona. It is a four-lane facility with complete grade separation and a speed limit of 70 miles per hour (mph).

State Route 115 (SR 115) has a distance of 33.6 miles and facilitates interregional agricultural goods movement and provides intraregional travel between various cities within Imperial County. For the most part, State Route 115 is a two-lane conventional highway, although some short segments are four lanes. The posted speed limit of 65 mph.

Evan Hewes Highway (State Route 115) is an east-west, two-lane undivided paved road from Austin Road to La Brucherie Road. Bike lanes or bus stops are not provided, and the posted speed limit is 40 mph.

State Route 7 is a four-lane highway that connects I-8 to the border of Mexico in Calexico. The posted speed limit is 65 mph.

Arterial Roadways

Kavanaugh Road is an east-west, two-lane roadway with a posted speed limit of 65 mph. The road merges with SR 115 for approximately one mile, and this road connects Graeser Road. It is a paved road west of Miller Road and becomes an unpaved road east of Miller Road.

Bonds Corner Road is a two-lane, north-south facility which connects from SR 98 in Calexico to the city of Holtville. It connects to I-8 via a diamond interchange with stop sign controls on the east and west approaches. The posted speed limit is 55 mph.

Orchard Road is a two-lane, north-south road that connects I-8 to the city of Holtville. The interchange at I-8 is a partial cloverleaf interchange with stop sign controls on the east-west approaches. The posted speed limit is 55 mph.

Collector Roadways

Snyder Road is a two-lane, north-south road that is 24 feet wide with unpaved shoulders.

Miller Road, also known as County Highway S33 in the study area, is a two-lane, north-south road with unpaved shoulders.

Local Roadways

Norrish Road is a two-lane, east-west road that runs from SR 115 to Graeser Road.

Nelson Pit Road is a two-lane, east-west road with unpaved shoulders.

Fust Road is an unpaved two-lane, north-south road.

Graeser Road is an unpaved two-lane local road that runs east from Miller Road until the irrigation channel, where it runs north parallel to the channel.

Ogier Road is an unpaved two-lane local road that connects Snyder Road and Miller Road. It becomes Graeser Road west of Miller Road.

Transit, bicycle, and pedestrian facilities are not available in the study area.

Study Segments

A total of seven study segments (listed in Table 1 and shown in Figure 3) were selected for the purposes of this analysis.

Table 1: Study Intersections

#	Roadway	Segment	Roadway Type
1	Snyder Road	Nelson Pit Road and Norrish Road	Collector 2 lane
2	SR 115	Walnut Avenue and Maple Avenue	Prime Arterial 2 Lane
3	Orchard Road	S7 and SR 115	Prime Arterial 2 Lane
4	Nelson Pit Road	Evan Hewes Highway and Project Site	Collector 2 lane
5	Miller Road	Evan Hewes Highway and Nelson Pit Road	Collector 2 lane
6	Snyder Road	Evan Hewes Highway and Nelson Pit Road	Collector 2 lane
7	Evan Hewes Highway	Snyder Road and Van Der Linden Road	Prime Arterial 2 Lane

Source: Kittelson & Associates, Inc., 2021

INTERSECTIONS

Study Intersections

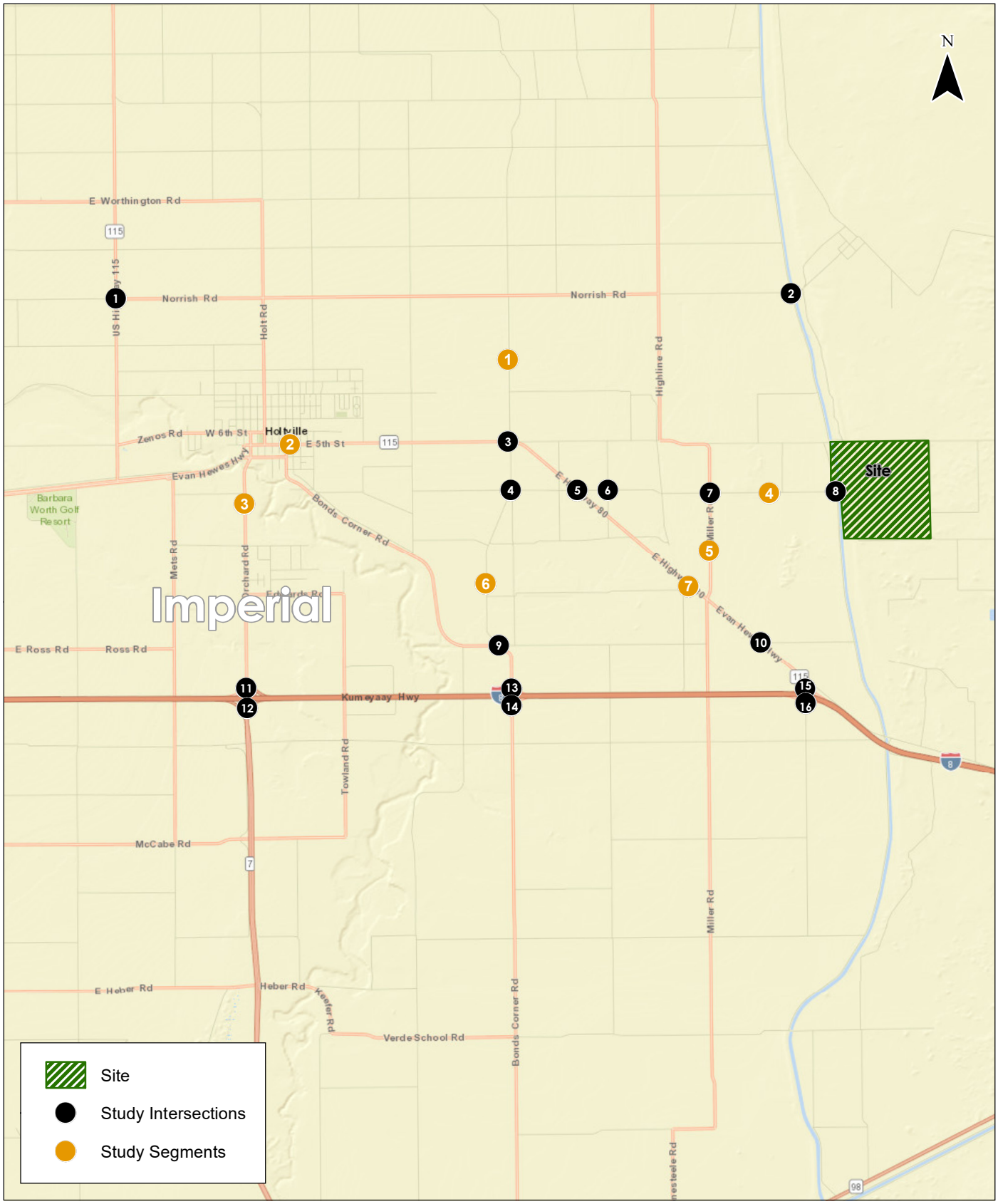
A total of 16 study intersections (listed in Table 2 and shown in Figure 3) were selected; these locations were identified in consultation with the County. All intersection vehicle turning movement counts were collected on Friday, December 18, 2020 during the weekday morning (7:00 AM to 9:00 AM) and evening (4:00 PM to 6:00 PM) peak periods.

Table 2: Study Intersections

	Intersection	Traffic Control
1	SR 115 & Norrish Road	TWSC
2	Graeser Road & Norrish Road	TWSC
3	Snyder Road & Evan Hewes Highway	TWSC
4	Snyder Road & Nelson Pit Road	TWSC
5	SR 115 & Nelson Pit Road	TWSC
6	Fust Road & Nelson Pit Road	TWSC
7	Miller Road & Nelson Pit Road	TWSC
8	Graeser Road & Nelson Pit Road	TWSC
9	Bonds Corner Road/Ogier Road & Snyder Road	TWSC
10	Evan Hewes Highway & Graeser Road	TWSC
11	Orchard Road (S7) & I-8 Westbound Ramps	TWSC
12	Orchard Road (S7) & I-8 Eeastbound Ramps	TWSC
13	Bonds Corner Road & I-8 Westbound Ramp	TWSC
14	Bonds Corner Road & I-8 Eeastbound Ramps	TWSC
15	SR 115 & I-8 Westbound Ramps	TWSC
16	SR 115 & I-8 Eastbound Ramps	TWSC

Source: Kittelson & Associates, Inc., 2021
Note: TWSC signifies a two-way stop-controlled intersection.

Figure 4 **Error! Reference source not found.**shows automobile peak hour volumes at the study intersections. Intersection control (i.e., signalized or stop-controlled) and lane geometries are also shown. Appendix A contains the field-collected count sheets.



Study Locations | **Figure 3**

Coordinate System: NAD83 California zone 6 ftUS
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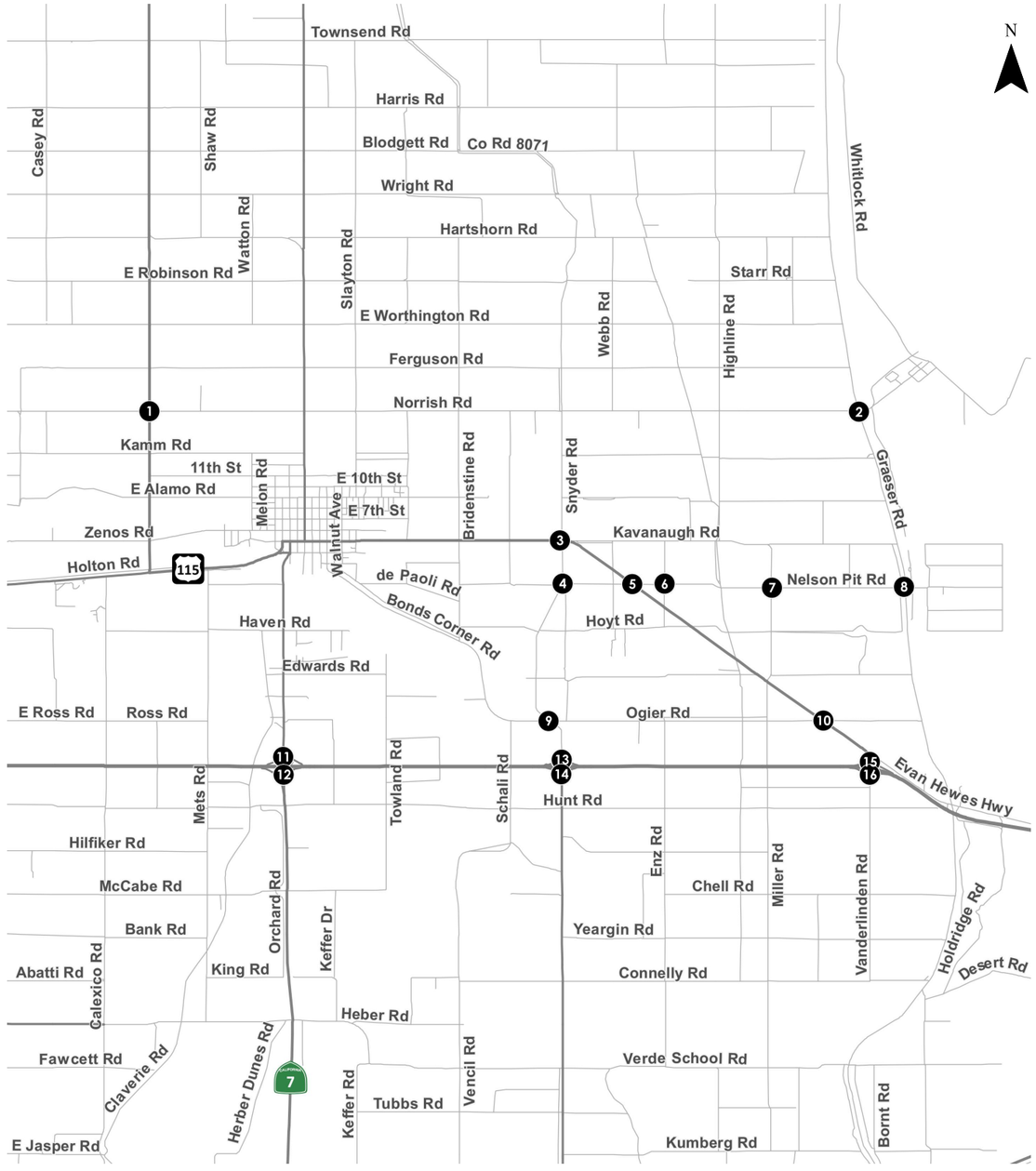
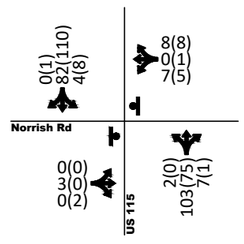
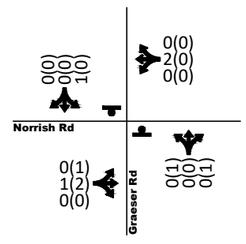


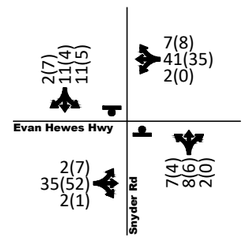
1 US 115 & Norrish Rd



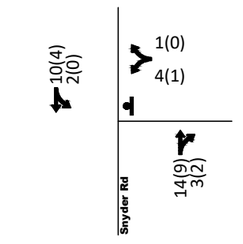
2 Graeser Rd & Norrish Rd



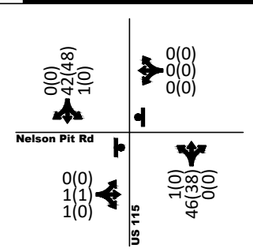
3 Snyder Rd & Evan Hewes Hwy



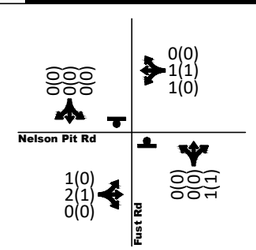
4 Snyder Rd & Nelson Pit Rd



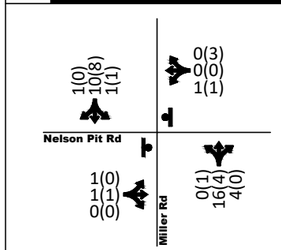
5 US 115 & Nelson Pit Rd



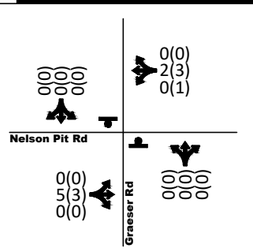
6 Fust Rd & Nelson Pit Rd



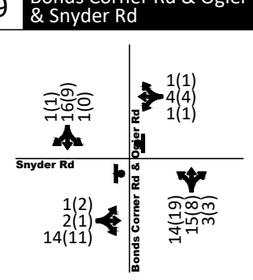
7 Miller Rd & Nelson Pit Rd



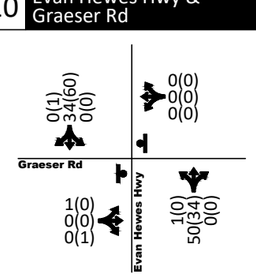
8 Graeser Rd & Nelson Pit Rd



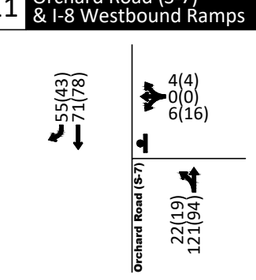
9 Bonds Corner Rd & Ogier Rd & Snyder Rd



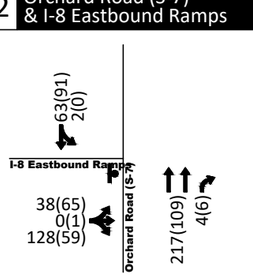
10 Evan Hewes Hwy & Graeser Rd



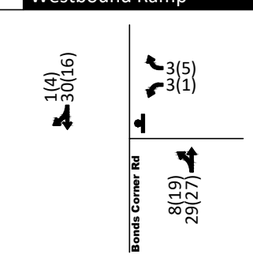
11 Orchard Road (S-7) & I-8 Westbound Ramps



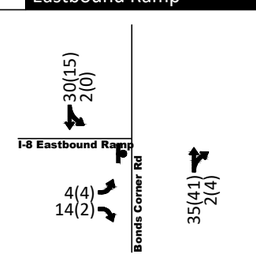
12 Orchard Road (S-7) & I-8 Eastbound Ramps



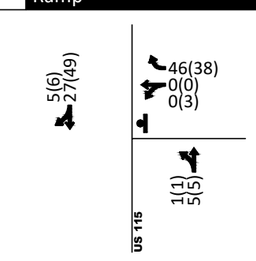
13 Bonds Corner Rd & I-8 Westbound Ramp



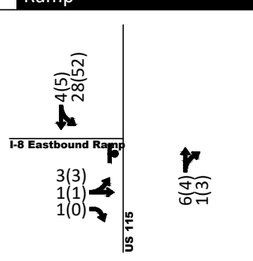
14 Bonds Corner Rd & I-8 Eastbound Ramp



15 US 115 & I-8 Westbound Ramp



16 US 115 & I-8 Eastbound Ramp



AM(PM) - Traffic Volume

- Stop Sign

Existing Traffic Volumes
AM and PM Peak

Figure
4

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ANALYSIS METHDOLOGY AND IMPACT SIGNIFICANT CRITERIA

Under Senate Bill (SB) 743, a project's effect on automobile delay shall not constitute a significant environmental impact. Therefore, level of service (LOS) and other similar vehicle delay or capacity metrics may no longer serve as transportation impact metrics for California Environmental Quality Act (CEQA) impact analyses. The Governor's Office of Planning and Research (OPR) has updated the CEQA Guidelines and provided a final technical advisory in December 2018 which recommends vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts under CEQA. For land use and transportation projects, SB 743-compliant CEQA analysis became mandatory on July 1, 2020. Automobile delay, as described solely by LOS or similar measure of traffic congestion, is no longer considered a significant impact under CEQA. However, the County of Imperial Department of Public Works requires transportation analyses to review roadway capacity in terms of LOS to identify deficiencies and require improvements to the circulation system outside of CEQA. The rest of this chapter discusses the criteria and thresholds of VMT and LOS analysis.

LEVEL OF SERVICE STANDARDS

As discussed above, a project's effect on roadway capacity and LOS does not constitute a significant environmental impact under CEQA. However, a LOS evaluation is required per County guidelines to determine if the project would cause any negative effects on roadway operations. The Imperial County Traffic Study and Report Policy, and the County's General Plan Circulation and Scenic Highway Element[2] requires intersections and roadway segments to maintain a peak-hour LOS of C or better.

Intersection Level of Service Definitions

In this report, LOS is based on the *Highway Capacity Manual* (HCM) 6th edition definitions, included as Table 3: Level of Service Standards for ease of reference. The HCM methodology assigns a LOS grade to an intersection based on the delay for vehicles at the intersection, ranging from LOS A to LOS F; LOS A signifies very slight delay with no approach phase fully utilized, while LOS F signifies very high delays and congestion, frequent cycle failures, and long queues. For signalized and all-way stop-controlled intersections, the average control delay for all vehicles is assessed; for two-way stop-controlled intersections, the intersection approach with the highest delay is utilized. Table 3 shows the LOS thresholds from HCM.

Table 3: Level of Service Standards

Level of Service	Delay Per Vehicle (Seconds)	
	Signalized Intersection	Unsignalized Intersection
A	< 10.0	< 10.0
B	> 10.0 to 20.0	> 10.0 to 15.0
C	> 20.0 to 35.0	> 15.0 to 25.0
D	> 35.0 to 55.0	> 25.0 to 35.0
E	> 55.0 to 80.0	> 35.0 to 50.0
F	> 80.0	> 50.0

Source: Highway Capacity Manual, 6th edition,2016

[2] Circulation and Scenic Highways Element dated January 29, 2008, which states "The County's goal for an acceptable traffic service standard on an ADT basis and during AM and PM peak periods for all County-Maintained Road shall be LOS C for all street segment links and intersections.

Roadway Segment Level of Service Definitions

Roadway segment operations were also determined on a daily traffic volume basis. Operations were assigned a Level of Service letter grade ranging from LOS A to LOS F (from better to worse congestion), with A signifying free-flow traffic and F signifying volumes that are over roadway capacity. The Circulation and Scenic Highway Element of the Imperial County General Plan has provided roadway capacities. For this analysis, the LOS and ADT corresponding table (Table 4) from the Circulation and Scenic Highway Element of the Imperial County General Plan was utilized.

Table 4: Roadway Segment Level of Service

Street Classification	Level of Service and ADT Volume Correspondence[1]				
	A	B	C	D	E
Prime Arterial	22,200	37,000	44,600	50,000	57,000
Minor Arterial	14,800	24,700	29,600	33,400	37,000
Minor Collector	1,900	4,100	7,100	10,900	16,200

Source: Imperial County General Plan, Circulation and Scenic Highway Element, 2008

Notes: 1 ADT = Average Daily Traffic

VMT IMPACT SIGNIFICANCE CRITERIA

The County has not adopted its own VMT thresholds, thus the OPR's Technical Advisory[3] was used to evaluate VMT impacts.

OPR's Technical Advisory provides guidance for lead agencies to evaluate transportation impacts from projects based on VMT metrics. It provides screening criteria, which can be used to quickly identify whether a project should be expected to cause a less-than-significant impact related to VMT. Per OPR's Technical Advisory, projects may be screened out as follows:

- Small Projects: projects generate fewer than 110 trips per day
- Local Serving Retail (generally less than 50,000 square feet in building area)
- Location-Based (low VMT areas, within ½ mile of an existing major transit stop, or along a high-quality transit corridor)
- Provision of affordable housing

If further VMT analysis is required, recommended thresholds are set for residential, office, and retail projects. The thresholds for a significant transportation impacts are summarized in Table 5.

[3] Technical Advisory on Evaluating Transportation Impacts in CEQA, California Office of Planning and Research, December 2018

Table 5: Recommended Numeric Thresholds

Land Use	Threshold
Residential	Exceeding a level of 15 percent below existing VMT per capita
Office	Exceeding a level of 15 percent below existing regional VMT per employee
Retail	A net increase in total VMT

Source: Technical Advisory on Evaluating Transportation Impacts in CEQA by OPR, December 2018

LEVEL OF SERVICE ANALYSIS

EXISTING TRAFFIC CONDITIONS

The existing conditions analysis is based on the traffic count data methodologies described above. The following provides a summary of existing traffic conditions on study roadways and intersections.

AUTOMOBILE LEVEL OF SERVICE

As previously discussed, LOS at the study intersections was evaluated based on the HCM 6th Edition methodology, as implemented in the Synchro 10 software package. LOS analysis was performed for the weekday AM and PM peak hours using traffic counts collected in the field. Table 6 provides a summary of the existing automobile level of service. Appendix B contains the Existing Conditions LOS worksheets at the study intersections. As shown in Table 6, all study intersections operate acceptably (LOS C or better) under existing conditions.

Table 6: Automobile Level of Service, Existing Conditions

#	Intersection	Traffic Control	Weekday AM		Weekday PM	
			Delay (Sec)	LOS	Delay (Sec)	LOS
1	SR 115 & Norrish Road	TWSC	10.4	B	9.4	A
2	Graeser Road & Norrish Road	TWSC	8.6	A	8.5	A
3	Snyder Road & Evan Hewes Highway	TWSC	9.6	A	9.7	A
4	Snyder Road & Nelson Pit Road	TWSC	8.7	A	8.6	A
5	SR 115 & Nelson Pit Road	TWSC	9.1	A	9.6	A
6	Fust Road & Nelson Pit Road	TWSC	8.3	A	8.3	A
7	Miller Road & Nelson Pit Road	TWSC	9.1	A	9.1	A
8	Graeser Road & Nelson Pit Road	TWSC	0.0	A	7.2	A
9	Bonds Corner Road/Ogier Road & Snyder Road	TWSC	9.3	A	9.3	A
10	Evan Hewes Highway & Graeser Road	TWSC	9.1	A	8.6	A
11	Orchard Road (S7) & I-8 WB Ramps	TWSC	9.0	A	8.9	A
12	Orchard Road (S7) & I-8 EB Ramps	TWSC	9.2	A	9.1	A
13	Bonds Corner Road & I-8 WB Ramp	TWSC	8.8	A	8.6	A
14	Bonds Corner Road & I-8 EB Ramps	TWSC	8.6	A	8.7	A
15	SR 115 & I-8 WB Ramps	TWSC	8.5	A	8.5	A
16	SR 115 & I-8 EB RAMPS	TWSC	8.9	A	9.3	A

Source: Kittelson & Associates, Inc., 2021
Note: Delay of 0.0 second means that the traffic volumes are zero or no conflicts

Roadway segment operations LOS are determined on a daily traffic volume basis. Table 7 provides a summary of existing roadway segment operations. All roadway segments operate acceptably under existing conditions.

Table 7: Existing Roadway Segment Level of Service

#	Roadway	Segment	Roadway Type	ADT	V/C Ratio	LOS C Capacity	LOS

1	Snyder Rd	Nelson Pit Rd and Norrish Rd	Minor Collector	964	0.14	7,100	A
2	SR 115	Walnut Ave and Maple Ave	Prime Arterial	5,957	0.13	44600	A
3	Orchard Rd	S7 and SR 115	Minor Arterial	4,527	0.15	29600	A
4	Nelson Pit Rd	Evan Hewes Highway and Project Site	Minor Collector	77	0.01	7,100	A
5	Miller Rd	Evan Hewes Highway and Nelson Pit Rd	Minor Collector	466	0.07	7,100	A
6	Snyder Rd	Evan Hewes Highway and Nelson Pit Rd	Minor Collector	536	0.08	7,100	A
7	Evan Hewes Highway	Snyder Rd and Van Der Linden Rd	Prime Arterial	2,273	0.05	44600	A

Source: Kittelson & Associates, Inc., 2021

TRAFFIC IMPACT ANALYSIS

LONG-TERM OPERATIONAL IMPACTS

Based on the project description provided by the project sponsor, once construction of the project is completed, the project would be remotely controlled. No employees would be based at the project sites. Primary security–related monitoring would be done remotely. Security personnel may conduct unscheduled security rounds and would be dispatched to the site in response to a fence breach or other alarm. Site maintenance workers may access the project site periodically to clean the panels and maintain the equipment and project area. The public would not have access to the facility. Access to the project site would be infrequent and limited to authorized personnel. The project is expected to generate very few trips once it is open and operational. In addition, as demonstrated above, the traffic volumes in the study area are very low, and all facilities operate at LOS A and B. Once constructed, the project will generate very few trips. Therefore, operation of the project would not result in traffic that would cause a detriment in traffic conditions in the area, and no improvements would be needed.

TEMPORARY CONSTRUCTION IMPACTS

The project is expected to generate vehicular trips during the construction phase. Construction activities will be the primary generator of trips for the project. Therefore, to identify any impacts the addition of construction trips may cause, the LOS analyses of the study intersections and roadway segments during project construction were conducted.

Construction-Related Trip Generation and Distribution

This section provides the vehicle trip generation and distribution estimates for the proposed project during construction. The number of on-site workers for the solar project and battery storage facilities is not expected to exceed 180 workers at any one time. As a worst-case condition, it is assumed that every construction worker would drive solo, there would be no carpooling, and all trips would coincide with the commute peak hour traffic hours (7-9AM and 4-6PM). In reality, it is likely that some workers will carpool and/or travel outside the commuter traffic peak hours. Under this worst-case assumption, project construction is estimated to generate 180 in-bound trips during the AM peak hour, and 180 out-bound trips during the PM Peak hour. Onsite parking would be provided for all construction workers.

Delivery trucks are expected to follow the same routes as the construction workers. An estimated two trucks would arrive at the project site each day during the first few weeks of the construction of the solar generating facility. The truck delivery windows should be outside the AM and PM peak hours.

Based on the information provide by project sponsor, the construction worker traffic is expected to travel to the site from either Highway 115 east or Highway 8 east, to north on Miller Road and east on Nelson Pit Road to the project site. Construction trips are assigned based on the above information, satellite images to identify major origins/destinations near the project, and the Google Maps shortest routes from the site to the major origins/destinations during AM and PM peak hours.

The AM peak trip distribution for the project is as follows:

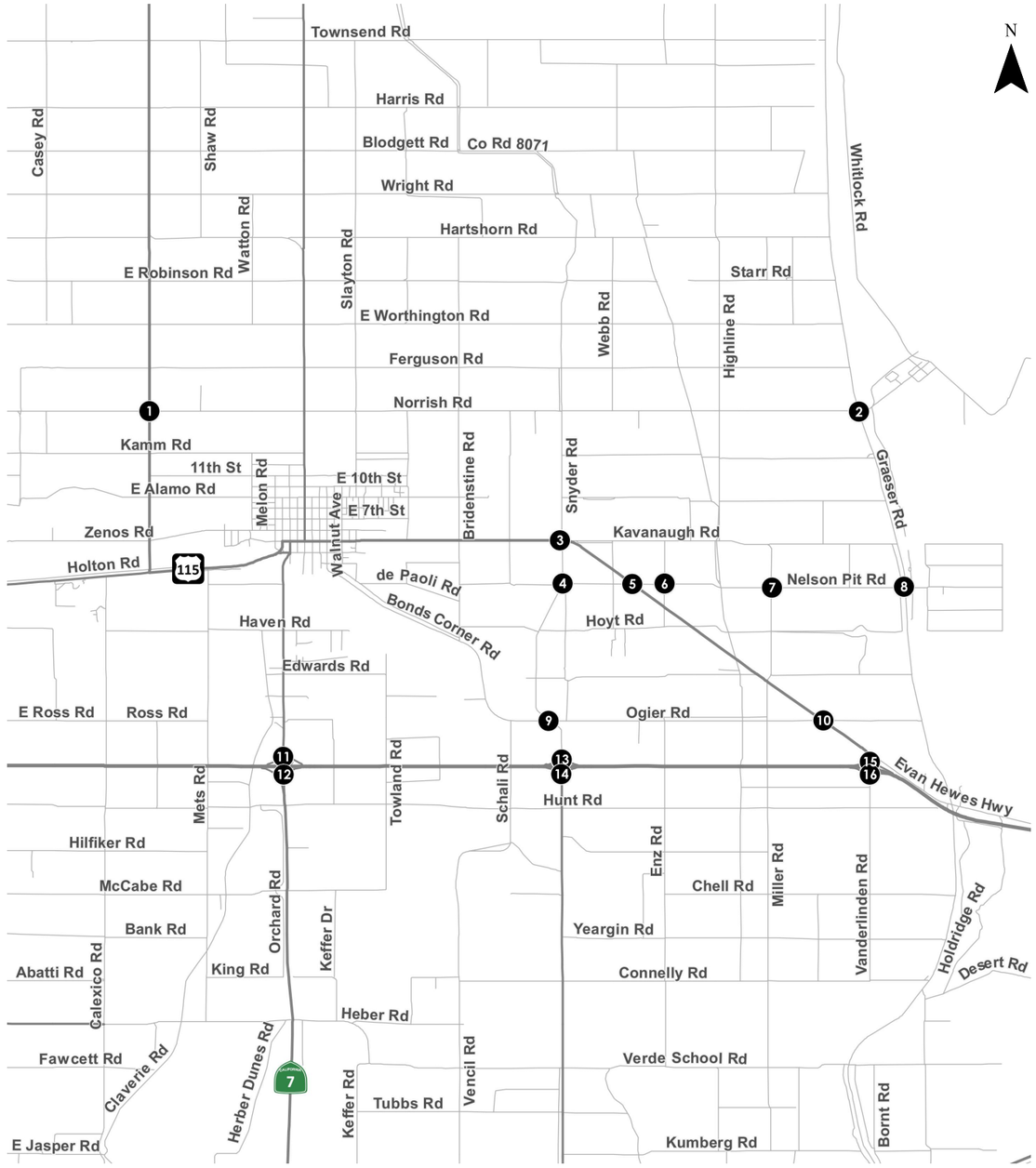
- 10 percent from the north via SR 115, Norrish Road, and Graeser Road
- 5 percent from the north via SR 115, Snyder Road, and Nelson Pit Road
- 20 percent from the west via SR 115, Evan Hewes Highway, and Nelson Pit Road
- 65 percent from I-8 (60 percent from the west, 5 percent from the south) via Exit 128 - Bonds Corner Road
    - 20 percent via Snyder Road and Nelson Pit Road
    - 45 percent via Ogier Road, Miller Road, and Nelson Pit Road

The PM peak trip distribution for the project is slightly different due to the shortest route showed in Google Maps that drivers are likely to take I-8 during the PM peak hour:

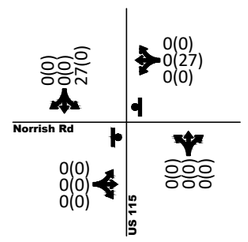
- 10 percent from the north via SR 115, Norrish Road, and Graeser Road
- 5 percent from the north via SR 115, Snyder Road, and Nelson Pit Road
- 20 percent from the west via SR 115, Evan Hewes Highway, and Nelson Pit Road
- 65 percent from I-8 (60 percent from the west, 5 percent from the south) via Nelson Pit Road, Miller Road, and SR 115 to Exit 131 – SR 115 and Van Der Linden Road

All trip distribution destinations total up to 100 percent.

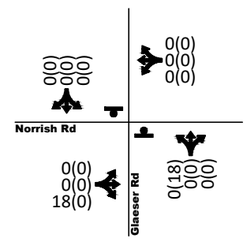
Figure 5 presents the weekday AM and PM project-only turning movements that were derived from the trip generation and trip distribution discussed in this section.



1 US 115 & Norrish Rd



2 Graeser Rd & Norrish Rd



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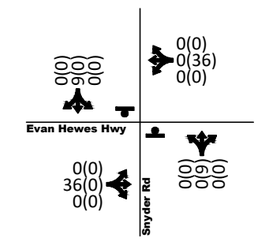
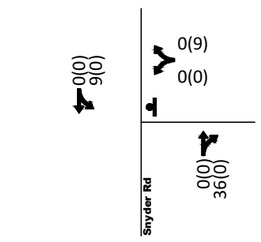
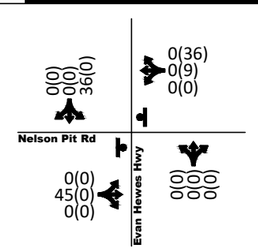


4 Snyder Rd & Nelson Pit Rd



5 US 115 & Nelson Pit Rd



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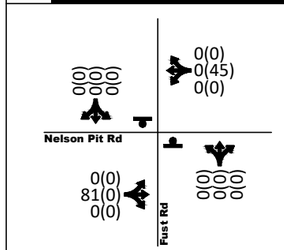

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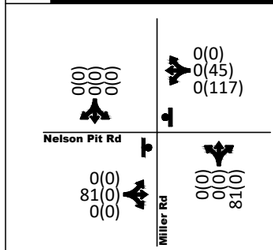

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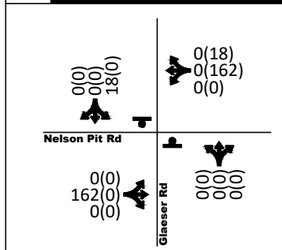
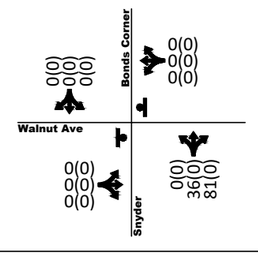
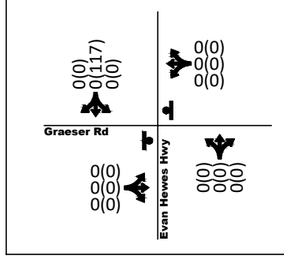


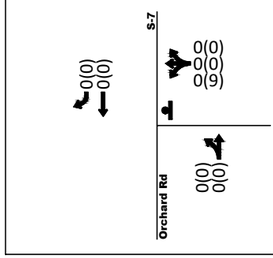
9 Bonds Corner Rd & Ogier Rd & Snyder Rd



10 Evan Hewes Hwy & Graeser Rd



11 Orchard Road (S-7) & I-8 Westbound Ramps



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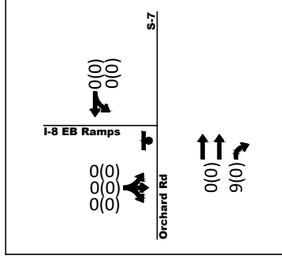

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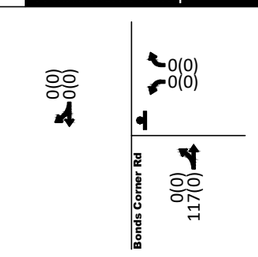

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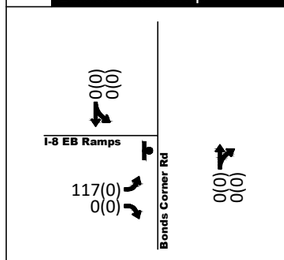
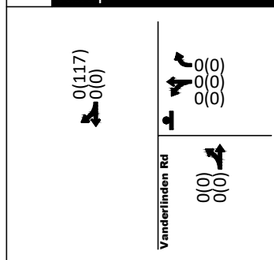
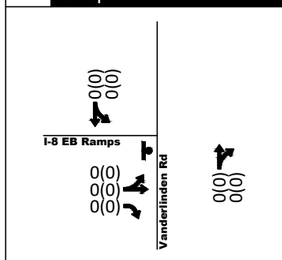


15 US 115 & I-8 Westbound Ramp



16 US 115 & I-8 Eastbound Ramp



AM(PM) - Traffic Volume

- Stop Sign

Project Construction Only Volumes
AM and PM Peak

Figure
5

KITTELSON & ASSOCIATES

Existing Plus Project Construction Traffic Conditions

The following presents the results of the Existing Plus Construction traffic operations analysis.

Existing Plus Construction Automobile Level of Service

The automobile turning movement counts for the Existing Plus Construction scenario were developed from summing the Existing Conditions turning movement counts and the Construction Only turning movements. Figure 6 **Error! Reference source not found.**presents the Existing Plus Construction turning movements. The lane configuration during the Existing Plus Construction traffic conditions remains the same as the Existing Conditions (shown in Figure 4).

Table 8 presents the Existing Plus Construction delays and LOS for the study intersections. The table also compares the changes in delay between the Existing and Existing Plus Construction scenarios. Appendix C contains the Existing Plus Construction LOS worksheets.

Table 8: Automobile Level of Service, Existing Plus Construction Conditions

#	Intersection	Traffic Control	Weekday AM			Weekday PM		
			Delay (Sec)	LOS	Change	Delay (Sec)	LOS	Change
1	SR 115 & Norrish Road	TWSC	10.9	B	0.5	10.5	B	1.1
2	Graeser Road & Norrish Road	TWSC	8.7	A	0.1	8.7	A	0.2
3	Snyder Road & Evan Hewes Highway	TWSC	10.1	B	0.5	10.2	B	0.5
4	Snyder Road & Nelson Pit Road	TWSC	8.9	A	0.2	8.5	A	-0.1
5	SR 115 & Nelson Pit Road	TWSC	10.7	B	1.6	9.6	A	0.0
6	Fust Road & Nelson Pit Road	TWSC	9.1	A	0.8	8.3	A	0.0
7	Miller Road & Nelson Pit Road	TWSC	11.2	B	2.1	9.6	A	0.5
8	Graeser Road & Nelson Pit Road	TWSC	10.7	B	10.7	7.2	A	0.0
9	Bonds Corner Road/Ogier Road & Snyder Road	TWSC	9.5	A	0.2	9.3	A	0.0
10	Evan Hewes Highway & Graeser Road	TWSC	9.1	A	0.0	9.4	A	0.8
11	Orchard Road (S7) & I-8 WB Ramps	TWSC	9.0	A	0.0	9.1	A	0.2
12	Orchard Road (S7) & I-8 EB Ramps	TWSC	9.2	A	0.0	9.2	A	0.1
13	Bonds Corner Road & I-8 WB Ramp	TWSC	9.5	A	0.7	8.6	A	0.0
14	Bonds Corner Road & I-8 EB Ramps	TWSC	9.7	A	1.1	8.7	A	0.0
15	SR 115 & I-8 WB Ramps	TWSC	8.5	A	0.0	8.6	A	0.1
16	SR 115 & I-8 EB RAMPS	TWSC	8.9	A	0.0	9.3	A	0.0

Source: Kittelson & Associates, Inc. 2021
Bold signifies unacceptable operations.
Shading indicates intersection improvement required.

As shown in the Table 9, all study intersections are expected to operate acceptably (LOS C or better) under Existing Plus Construction conditions.

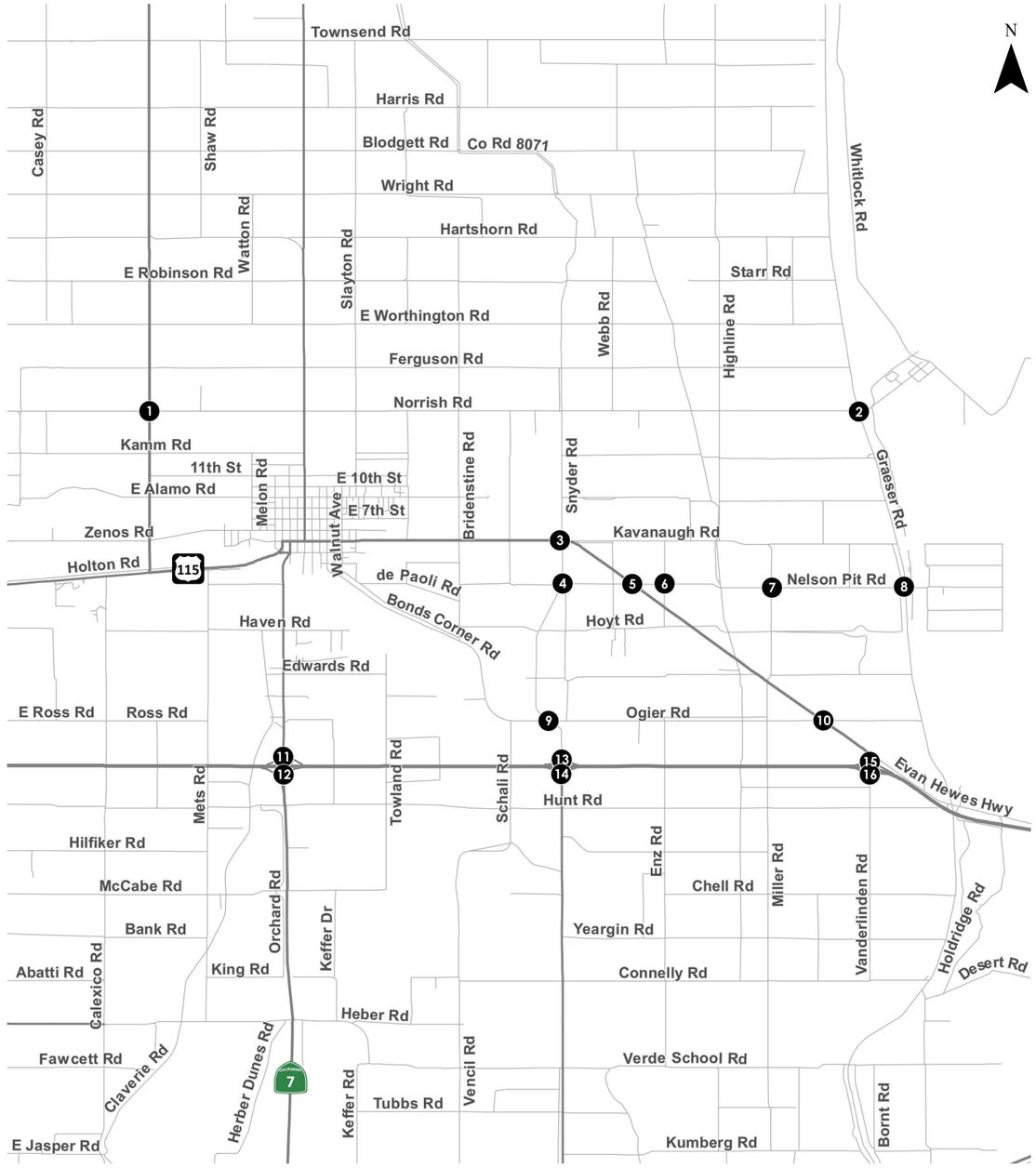
Roadway segments were also analyzed for the Existing Plus Construction scenario. All roadway segments operate acceptably (LOS C or better) under the Existing Plus Construction scenario.

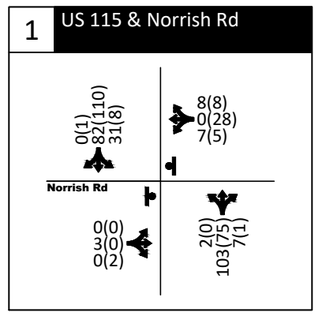
In summary, construction traffic would not result in congestion and excessive delays at study intersections and roadways.

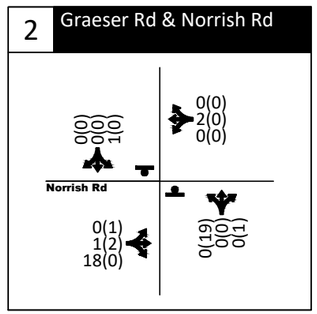
Table 9: Roadway Segment Level of Service, Existing Plus Construction

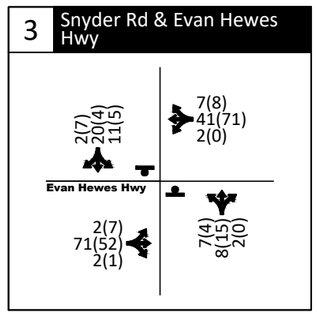
#	Roadway	Segment	Roadway Type	ADT	V/C Ratio	LOS C Capacity	LOS
1	Snyder Rd	Nelson Pit Rd and Norrish Rd	Minor Collector	982	0.14	7,100	A
2	SR 115	Walnut Ave and Maple Ave	Prime Arterial	6,029	0.14	44,600	A
3	Orchard Rd	S7 and SR 115	Minor Arterial	4,527	0.15	29,600	A
4	Nelson Pit Rd	Evan Hewes Highway and Project Site	Minor Collector	401	0.06	7,100	A
5	Miller Rd	Evan Hewes Highway and Nelson Pit Rd	Minor Collector	664	0.09	7,100	A
6	Snyder Rd	Evan Hewes Highway and Nelson Pit Rd	Minor Collector	572	0.08	7,100	A
7	Evan Hewes Highway	Snyder Rd and Van Der Linden Rd	Prime Arterial	2,273	0.05	44,600	A

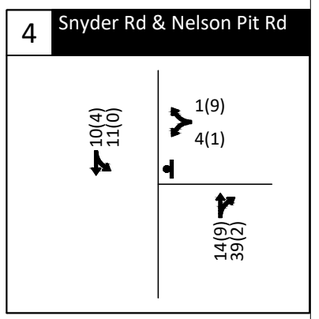
Source: Kittelson & Associates, Inc., 2021

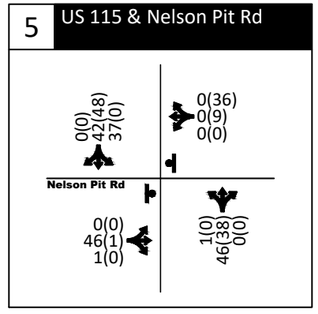


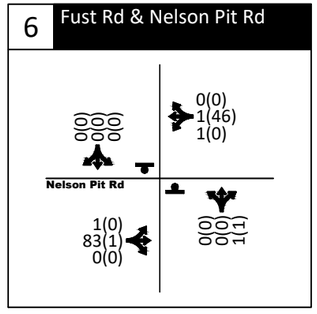


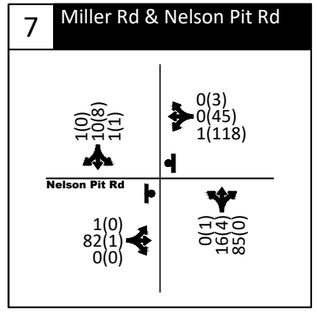


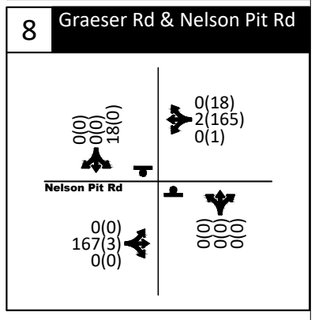


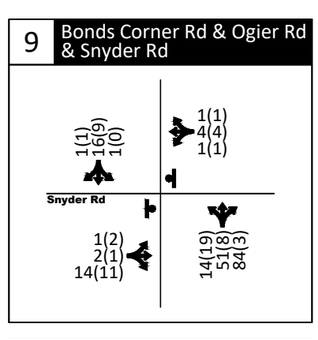


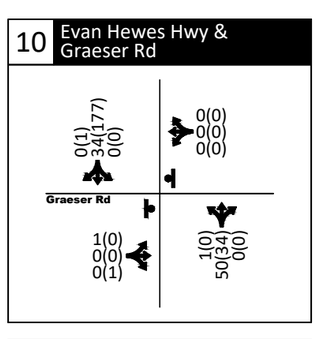


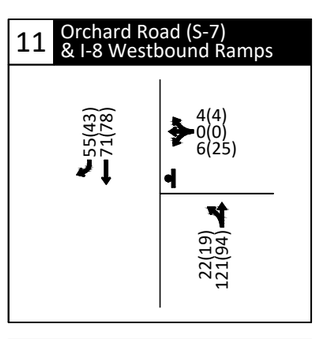


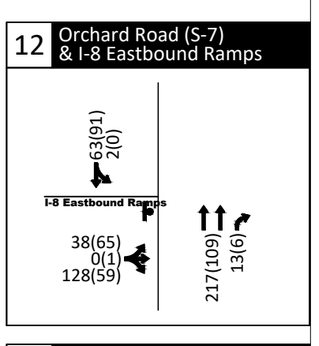


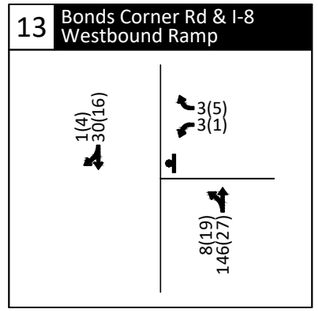


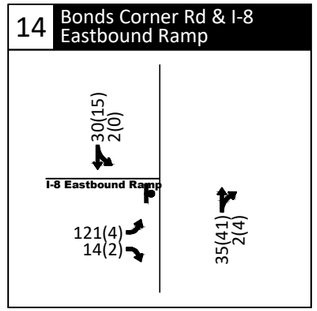


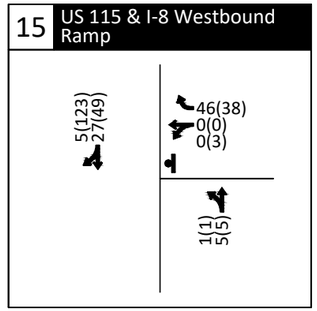


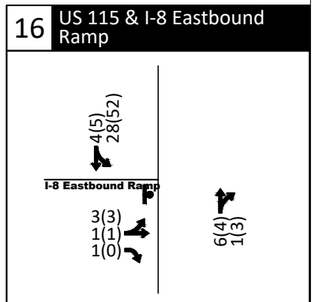












AM(PM) - Traffic Volume

- Stop Sign

Existing Plus Construction Volumes
AM and PM Peak

Figure
6

VMT IMPACT ANALYSIS

As discussed previously, OPR provides screening criteria that allow small projects (from a traffic standpoint) to screen out of a detailed VMT analysis based on the number of daily trips it generates. Projects that generate fewer than 110 trips per day can be presumed to result in less than significant VMT impacts.

The project would be remotely controlled. No employees would be based at the project site. Security-related monitoring would be done remotely. Personnel may conduct unscheduled security rounds, and maintenance workers may access the site periodically to clean the panels and maintain the equipment and project area. The public would not have access to the facility. Thus, the project will not generate more than 110 trips per day. Therefore, the project meets the small project screening criteria, and it will not have significant VMT impact.

ACCESS ANALYSIS

The project site would include one primary access driveway, currently contemplated on Nelson Pit Road, bisecting the project area and a secondary access driveway (if required) with a location that is yet to be determined. This driveway would be provided with a minimum of 30-foot double swing gates with a "Knox Box" for keyed entry. Internal to the project site, up to 30-foot-wide roads would be provided between the crystalline solar photovoltaic arrays, as well as around the perimeter of each project site inside the perimeter security fence to provide access to all areas of each site for maintenance and emergency vehicles. Because the conceptual plans lack sufficient detail of site aisles and parking spaces, the design assessment is limited to a high-level basis. It is expected that the project driveways (Nelson Pit Road) and drive aisles are sufficient to accommodate existing plus construction workers' vehicles (167 vehicles maximum). In addition, the exiting vehicle queues at the project driveway are not expected to exceed the available storage; therefore, no conflict is expected between queuing vehicles, parking spaces, and internal drive aisle intersections.

SUMMARY OF FINDINGS

Vikings Energy Farm LLC. is proposing to develop the Vikings Solar Energy Storage on the intersection of Nelson Pit Road and Graeser Road, in the county of Imperial, California. It is approximately 5.5 miles east of the city of Holtville.

By analyzing the traffic operation conditions under the County guidelines, study roadway segments and intersections all operate with a LOS B or better under the worst-case traffic scenario during existing and existing plus construction conditions. Thus, the LOS impact of the project during construction phase still meets acceptable LOS criteria.

As detailed in the VMT analysis section, the project can be screened out of a further VMT analysis under the latest OPR VMT criteria. Therefore, it was determined that the project would have a **less-than-significant** VMT impact. No mitigation measures have been identified.

For the project site access, the exiting and existing plus construction vehicle queues at the project driveway and drive aisles are not expected to exceed the available storage; therefore, no conflict is expected between queuing vehicles, parking spaces, and internal drive aisle intersections.

APPENDIX A: TRAFFIC COUNTS

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

County of Imperial
N/S: US-115
E/W: Norrish Road
Weather: Clear

File Name : 12_CIM_US-115_Norrish AM
Site Code : 99920467
Start Date : 12/18/2020

Groups Printed- Total Volume

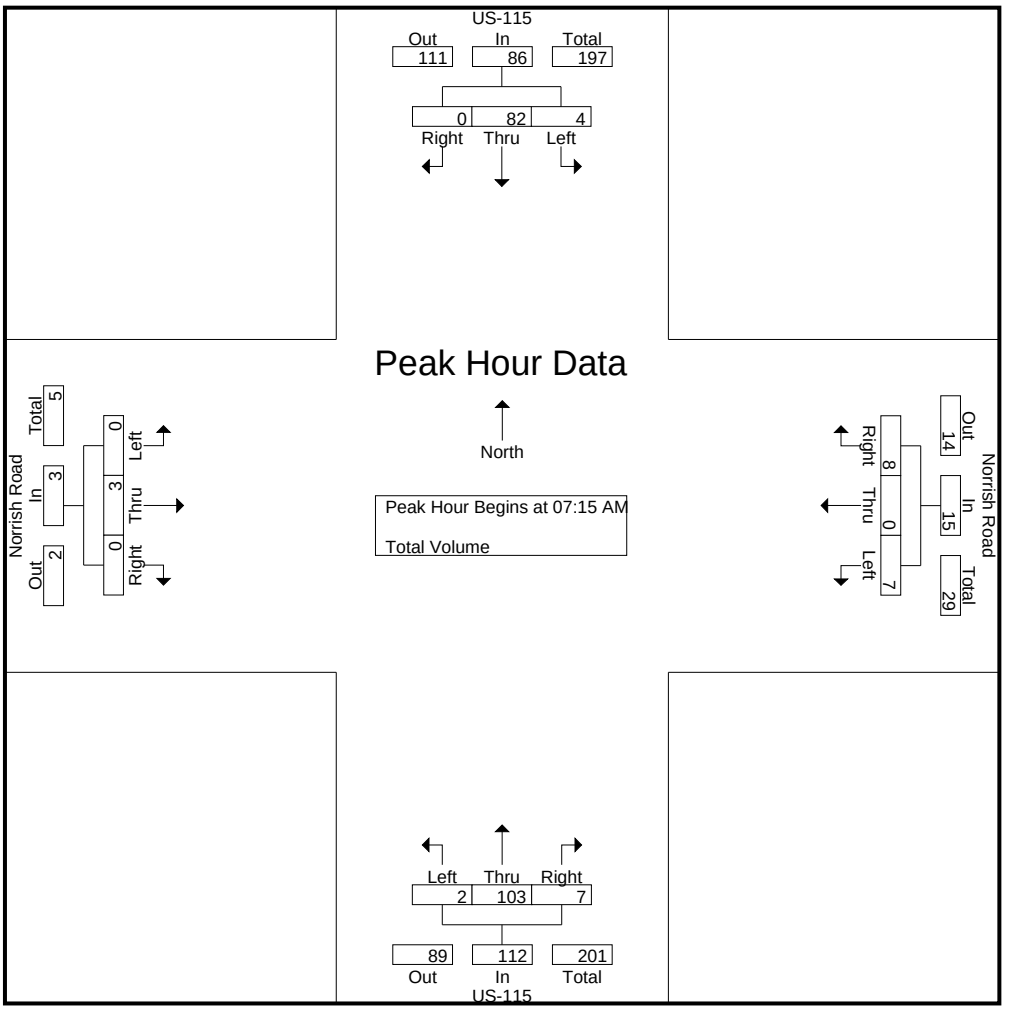
	US-115 Southbound				Norrish Road Westbound				US-115 Northbound				Norrish Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	16	0	18	0	0	4	4	0	28	5	33	0	0	0	0	55
07:15 AM	2	21	0	23	1	0	2	3	2	24	1	27	0	1	0	1	54
07:30 AM	0	17	0	17	0	0	6	6	0	23	2	25	0	0	0	0	48
07:45 AM	0	23	0	23	2	0	0	2	0	27	3	30	0	0	0	0	55
Total	4	77	0	81	3	0	12	15	2	102	11	115	0	1	0	1	212
08:00 AM	2	21	0	23	4	0	0	4	0	29	1	30	0	2	0	2	59
08:15 AM	2	17	0	19	0	0	1	1	0	20	1	21	0	1	0	1	42
08:30 AM	3	8	0	11	0	0	0	0	0	22	0	22	0	1	0	1	34
08:45 AM	3	15	0	18	0	1	0	1	0	16	1	17	0	1	0	1	37
Total	10	61	0	71	4	1	1	6	0	87	3	90	0	5	0	5	172
Grand Total	14	138	0	152	7	1	13	21	2	189	14	205	0	6	0	6	384
Apprch %	9.2	90.8	0		33.3	4.8	61.9		1	92.2	6.8		0	100	0		
Total %	3.6	35.9	0	39.6	1.8	0.3	3.4	5.5	0.5	49.2	3.6	53.4	0	1.6	0	1.6	

	US-115 Southbound				Norrish Road Westbound				US-115 Northbound				Norrish Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**2**	21	0	**23**	1	0	2	3	**2**	24	1	27	0	1	0	1	54
07:30 AM	0	17	0	17	0	0	**6**	**6**	0	23	2	25	0	0	0	0	48
07:45 AM	0	**23**	0	23	2	0	0	2	0	27	**3**	**30**	0	0	0	0	55
08:00 AM	2	21	0	23	**4**	0	0	4	0	**29**	1	30	0	**2**	0	**2**	**59**
Total Volume	4	82	0	86	7	0	8	15	2	103	7	112	0	3	0	3	216
% App. Total	4.7	95.3	0		46.7	0	53.3		1.8	92	6.2		0	100	0		
PHF	.500	.891	.000	.935	.438	.000	.333	.625	.250	.888	.583	.933	.000	.375	.000	.375	.915

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

County of Imperial
N/S: US-115
E/W: Norrish Road
Weather: Clear

File Name : 12_CIM_US-115_Norrish AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				08:00 AM			
+0 mins.	**2**	21	0	**23**	0	0	4	4	0	**28**	**5**	**33**	0	**2**	0	**2**
+15 mins.	0	17	0	17	1	0	2	3	**2**	24	1	27	0	1	0	1
+30 mins.	0	**23**	0	23	0	0	**6**	**6**	0	23	2	25	0	1	0	1
+45 mins.	2	21	0	23	**2**	0	0	2	0	27	3	30	0	1	0	1
Total Volume	4	82	0	86	3	0	12	15	2	102	11	115	0	5	0	5
% App. Total	4.7	95.3	0		20	0	80		1.7	88.7	9.6		0	100	0	
PHF	.500	.891	.000	.935	.375	.000	.500	.625	.250	.911	.550	.871	.000	.625	.000	.625

Counts Unlimited, Inc.
PO Box 1178
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County of Imperial
N/S: US-115
E/W: Norrish Road
Weather: Clear

File Name : 12_CIM_US-115_Norrish PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	US-115 Southbound				Norrish Road Westbound				US-115 Northbound				Norrish Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	28	0	28	2	1	0	3	1	22	3	26	0	0	0	0	57
04:15 PM	3	23	0	26	2	0	1	3	0	18	0	18	0	0	1	1	48
04:30 PM	2	35	1	38	0	0	4	4	0	20	0	20	0	0	1	1	63
04:45 PM	1	23	0	24	1	1	1	3	0	10	0	10	0	0	0	0	37
Total	6	109	1	116	5	2	6	13	1	70	3	74	0	0	2	2	205
05:00 PM	2	29	0	31	2	0	2	4	0	27	1	28	0	0	0	0	63
05:15 PM	2	20	0	22	1	0	2	3	0	10	0	10	0	0	0	0	35
05:30 PM	0	33	0	33	1	0	0	1	0	20	1	21	0	0	0	0	55
05:45 PM	0	19	0	19	1	0	1	2	0	12	1	13	0	0	0	0	34
Total	4	101	0	105	5	0	5	10	0	69	3	72	0	0	0	0	187
Grand Total	10	210	1	221	10	2	11	23	1	139	6	146	0	0	2	2	392
Apprch %	4.5	95	0.5		43.5	8.7	47.8		0.7	95.2	4.1		0	0	100		
Total %	2.6	53.6	0.3	56.4	2.6	0.5	2.8	5.9	0.3	35.5	1.5	37.2	0	0	0.5	0.5	

	US-115 Southbound				Norrish Road Westbound				US-115 Northbound				Norrish Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**3**	23	0	26	**2**	0	1	3	0	18	0	18	0	0	**1**	**1**	48
04:30 PM	2	**35**	**1**	**38**	0	0	**4**	**4**	0	20	0	20	0	0	1	1	**63**
04:45 PM	1	23	0	24	1	**1**	1	3	0	10	0	10	0	0	0	0	37
05:00 PM	2	29	0	31	2	0	2	4	0	**27**	**1**	**28**	0	0	0	0	63
Total Volume	8	110	1	119	5	1	8	14	0	75	1	76	0	0	2	2	211
% App. Total	6.7	92.4	0.8		35.7	7.1	57.1		0	98.7	1.3		0	0	100		
PHF	.667	.786	.250	.783	.625	.250	.500	.875	.000	.694	.250	.679	.000	.000	.500	.500	.837

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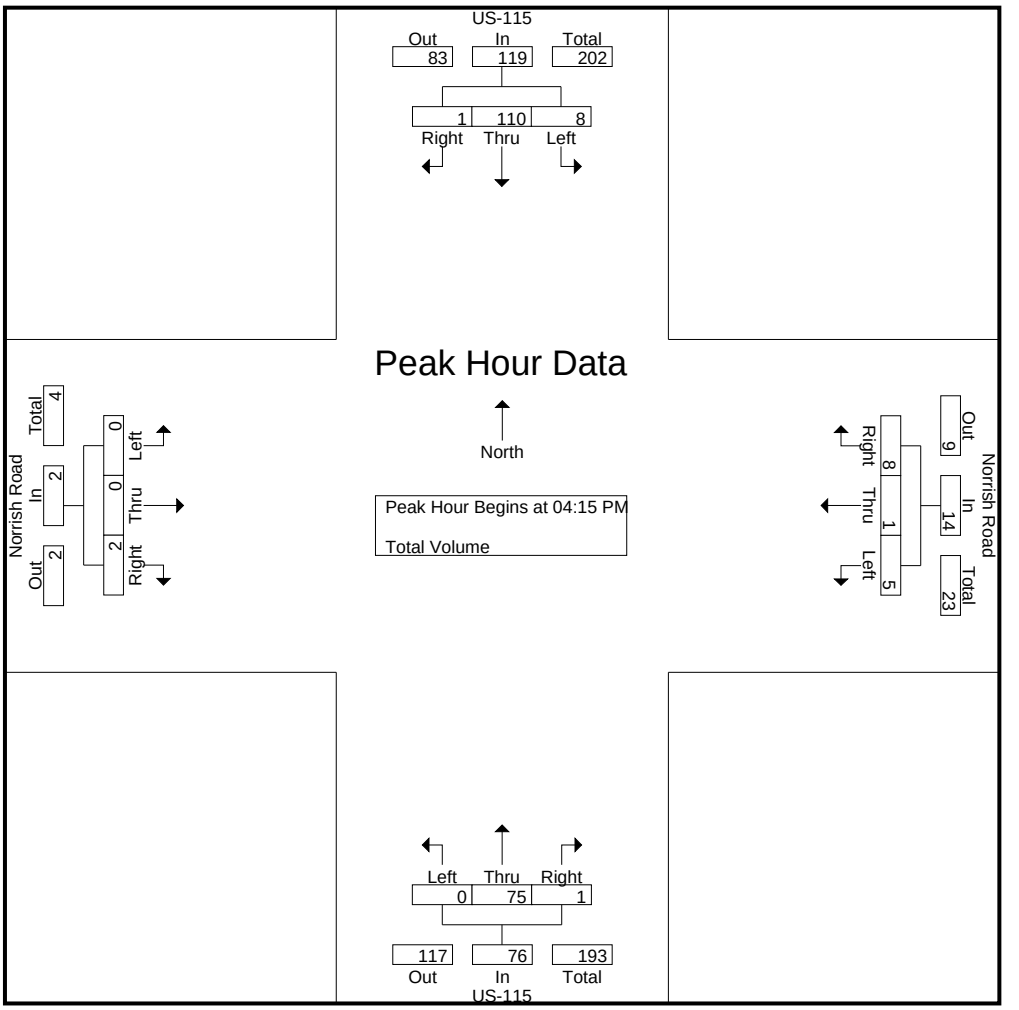
County of Imperial
N/S: US-115
E/W: Norrish Road
Weather: Clear

File Name : 12_CIM_US-115_Norrish PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:00 PM			
+0 mins.	**3**	23	0	26	**2**	0	1	3	0	18	0	18	0	0	0	0
+15 mins.	2	**35**	**1**	**38**	0	0	**4**	**4**	0	20	0	20	0	0	**1**	**1**
+30 mins.	1	23	0	24	1	**1**	1	3	0	10	0	10	0	0	1	1
+45 mins.	2	29	0	31	2	0	2	4	0	**27**	**1**	**28**	0	0	0	0
Total Volume	8	110	1	119	5	1	8	14	0	75	1	76	0	0	2	2
% App. Total	6.7	92.4	0.8		35.7	7.1	57.1		0	98.7	1.3		0	0	100	
PHF	.667	.786	.250	.783	.625	.250	.500	.875	.000	.694	.250	.679	.000	.000	.500	.500

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County of Imperial
N/S: Graeser Road
E/W: Norrish Road
Weather: Clear

File Name : 11_CIM_Graeser_Norrish AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Graeser Road Southbound				Norrish Road Westbound				Graeser Road Northbound				Norrish Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
08:00 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
Total	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	2	3
Grand Total	1	0	0	1	0	2	0	2	0	0	0	0	0	2	1	3	6
Apprch %	100	0	0		0	100	0		0	0	0		0	66.7	33.3		
Total %	16.7	0	0	16.7	0	33.3	0	33.3	0	0	0	0	0	33.3	16.7	50	

	Graeser Road Southbound				Norrish Road Westbound				Graeser Road Northbound				Norrish Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	**1**	0	**1**	**2**
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	1	0	0	1	0	2	0	2	0	0	0	0	0	1	0	1	4
% App. Total	100	0	0		0	100	0		0	0	0		0	100	0		
PHF	.250	.000	.000	.250	.000	.500	.000	.500	.000	.000	.000	.000	.000	.250	.000	.250	.500

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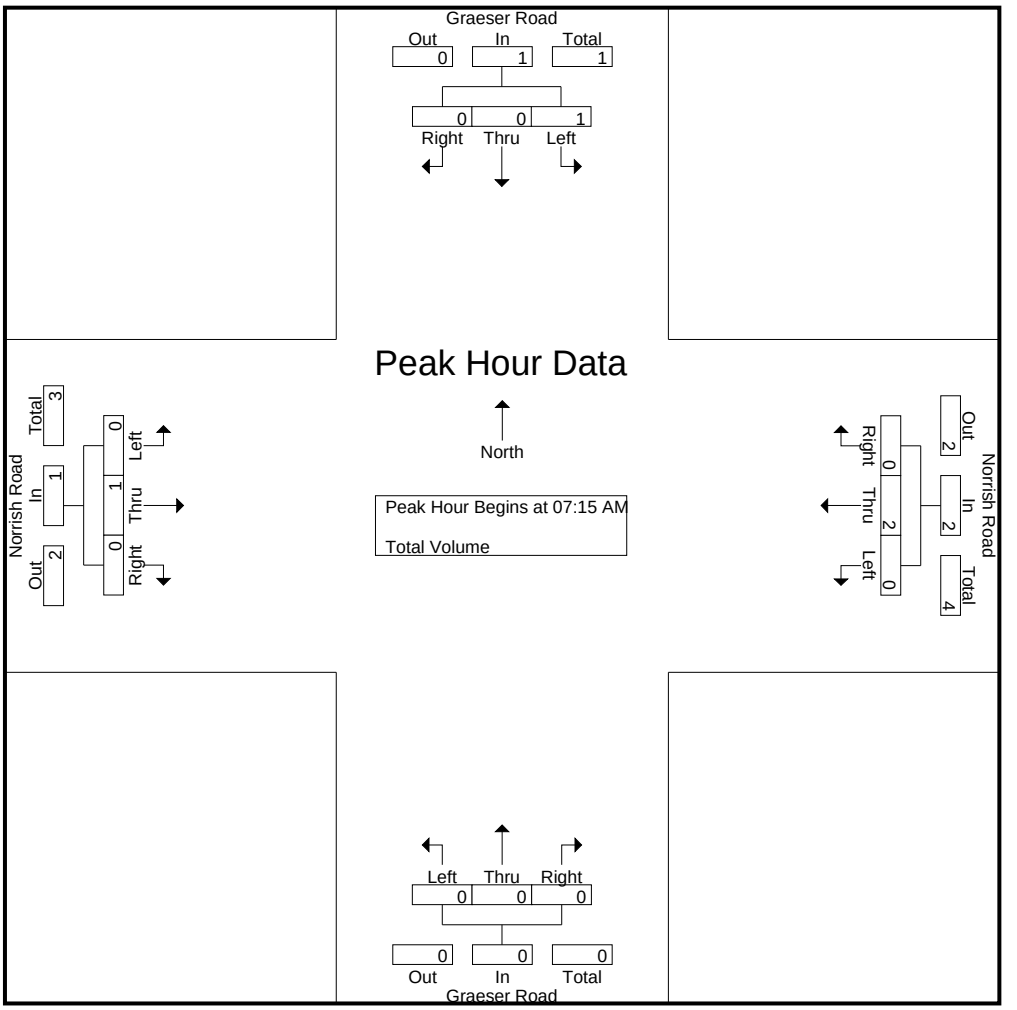
County of Imperial
N/S: Graeser Road
E/W: Norrish Road
Weather: Clear

File Name : 11_CIM_Graeser_Norrish AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	**1**	**1**	**2**
Total Volume	1	0	0	1	0	2	0	2	0	0	0	0	0	1	1	2
% App. Total	100	0	0		0	100	0		0	0	0		0	50	50	
PHF	.250	.000	.000	.250	.000	.500	.000	.500	.000	.000	.000	.000	.000	.250	.250	.250

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County of Imperial
N/S: Graeser Road
E/W: Norrish Road
Weather: Clear

File Name : 11_CIM_Graeser_Norrish PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Graeser Road Southbound				Norrish Road Westbound				Graeser Road Northbound				Norrish Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Total	0	1	0	1	0	0	0	0	1	0	1	2	0	1	0	1	4
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	2	3
Grand Total	0	1	0	1	0	0	0	0	2	0	1	3	1	2	0	3	7
Apprch %	0	100	0		0	0	0		66.7	0	33.3		33.3	66.7	0		
Total %	0	14.3	0	14.3	0	0	0	0	28.6	0	14.3	42.9	14.3	28.6	0	42.9	

	Graeser Road Southbound				Norrish Road Westbound				Graeser Road Northbound				Norrish Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	**1**	0	1	**2**
04:45 PM	0	0	0	0	0	0	0	0	0	0	**1**	1	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**1**	1	0	**2**	2
Total Volume	0	0	0	0	0	0	0	0	1	0	1	2	1	2	0	3	5
% App. Total	0	0	0		0	0	0		50	0	50		33.3	66.7	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.500	.250	.500	.000	.375	.625

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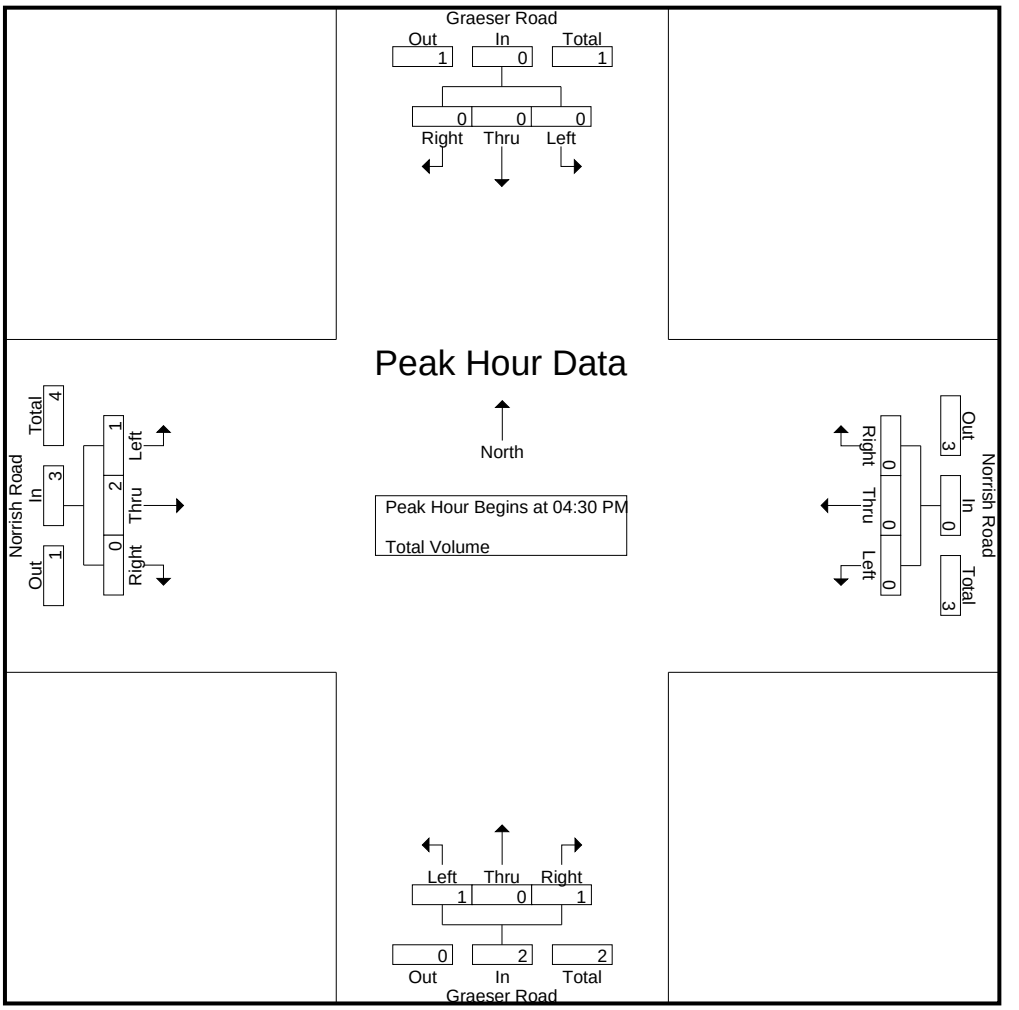
County of Imperial
N/S: Graeser Road
E/W: Norrish Road
Weather: Clear

File Name : 11_CIM_Graeser_Norrish PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:30 PM			
+0 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	**1**	0	1
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	**1**	1	**1**	1	0	**2**
Total Volume	0	1	0	1	0	0	0	0	1	0	1	2	1	2	0	3
% App. Total	0	100	0		0	0	0		50	0	50		33.3	66.7	0	
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.250	.000	.250	.500	.250	.500	.000	.375

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County of Imperial
N/S: Snyder Road
E/W: Evan Hewes Highway (SR-115)
Weather: Clear

File Name : 05_CIM_Snyder_Even AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Snyder Road Southbound				Evan Hewes Highway Westbound				Snyder Road Northbound				Evan Hewes Highway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	0	0	1	0	9	3	12	2	8	0	10	0	5	1	6	29
07:15 AM	4	0	2	6	0	4	5	9	1	0	2	3	2	3	1	6	24
07:30 AM	2	3	0	5	0	15	5	20	0	4	1	5	1	12	1	14	44
07:45 AM	4	2	1	7	0	9	0	9	1	1	0	2	1	9	1	11	29
Total	11	5	3	19	0	37	13	50	4	13	3	20	4	29	4	37	126
08:00 AM	2	4	1	7	0	8	1	9	3	2	0	5	0	9	0	9	30
08:15 AM	3	2	0	5	2	9	1	12	3	1	1	5	0	5	0	5	27
08:30 AM	2	1	0	3	0	5	3	8	1	0	2	3	0	7	1	8	22
08:45 AM	5	1	0	6	0	6	1	7	1	1	0	2	2	9	1	12	27
Total	12	8	1	21	2	28	6	36	8	4	3	15	2	30	2	34	106
Grand Total	23	13	4	40	2	65	19	86	12	17	6	35	6	59	6	71	232
Apprch %	57.5	32.5	10		2.3	75.6	22.1		34.3	48.6	17.1		8.5	83.1	8.5		
Total %	9.9	5.6	1.7	17.2	0.9	28	8.2	37.1	5.2	7.3	2.6	15.1	2.6	25.4	2.6	30.6	

	Snyder Road Southbound				Evan Hewes Highway Westbound				Snyder Road Northbound				Evan Hewes Highway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	2	3	0	5	0	**15**	**5**	**20**	0	**4**	**1**	**5**	**1**	**12**	**1**	**14**	**44**
07:45 AM	**4**	2	**1**	**7**	0	9	0	9	1	1	0	2	1	9	1	11	29
08:00 AM	2	**4**	1	7	0	8	1	9	**3**	2	0	5	0	9	0	9	30
08:15 AM	3	2	0	5	**2**	9	1	12	3	1	1	5	0	5	0	5	27
Total Volume	11	11	2	24	2	41	7	50	7	8	2	17	2	35	2	39	130
% App. Total	45.8	45.8	8.3		4	82	14		41.2	47.1	11.8		5.1	89.7	5.1		
PHF	.688	.688	.500	.857	.250	.683	.350	.625	.583	.500	.500	.850	.500	.729	.500	.696	.739

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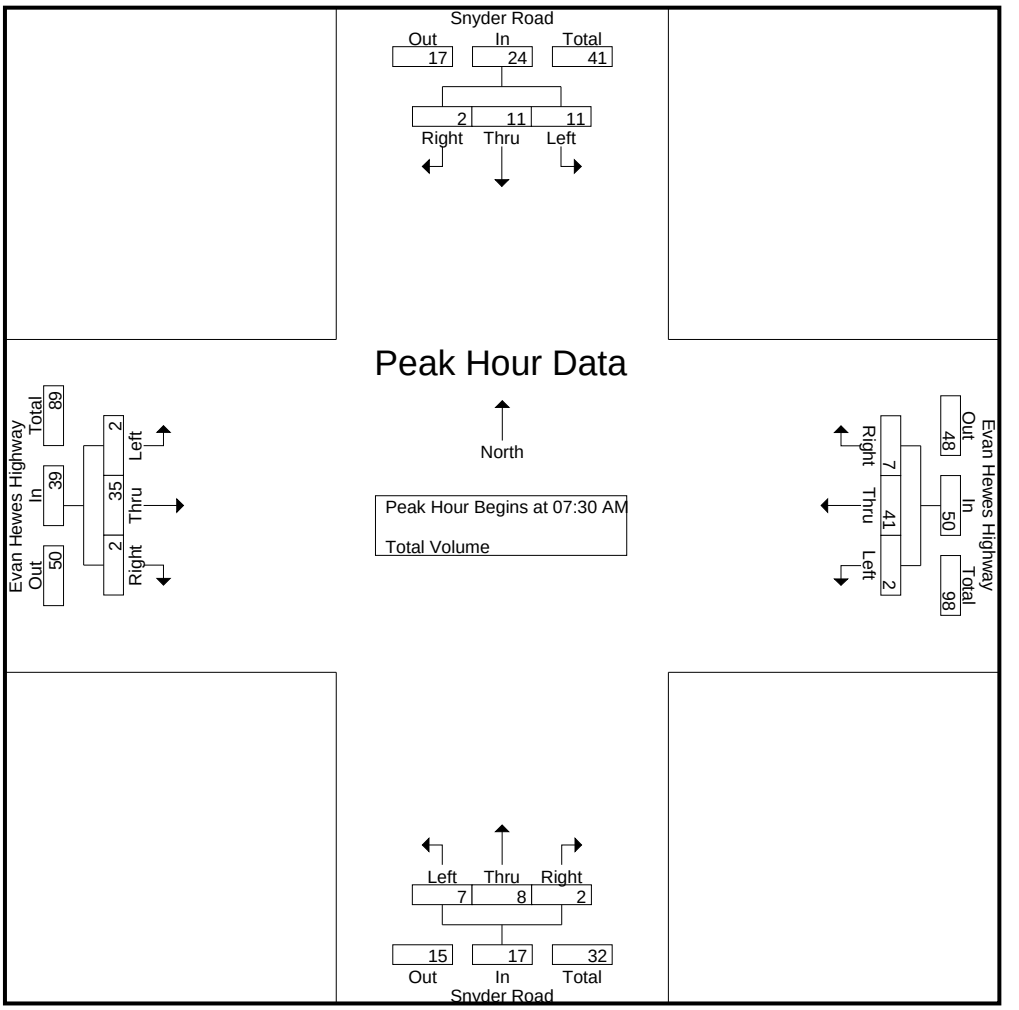
County of Imperial
N/S: Snyder Road
E/W: Evan Hewes Highway (SR-115)
Weather: Clear

File Name : 05_CIM_Snyder_Even AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	**4**	0	**2**	6	0	9	3	12	**2**	**8**	0	**10**	**2**	3	**1**	6
+15 mins.	2	3	0	5	0	4	**5**	9	1	0	**2**	3	1	**12**	1	**14**
+30 mins.	4	2	1	**7**	0	**15**	5	**20**	0	4	1	5	1	9	1	11
+45 mins.	2	**4**	1	7	0	9	0	9	1	1	0	2	0	9	0	9
Total Volume	12	9	4	25	0	37	13	50	4	13	3	20	4	33	3	40
% App. Total	48	36	16		0	74	26		20	65	15		10	82.5	7.5	
PHF	.750	.563	.500	.893	.000	.617	.650	.625	.500	.406	.375	.500	.500	.688	.750	.714

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County of Imperial
N/S: Snyder Road
E/W: Evan Hewes Highway (SR-115)
Weather: Clear

File Name : 05_CIM_Snyder_Even PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Snyder Road Southbound				Evan Hewes Highway Westbound				Snyder Road Northbound				Evan Hewes Highway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	4	4	0	8	3	11	4	2	0	6	1	18	0	19	40
04:15 PM	2	1	0	3	0	13	0	13	0	2	0	2	1	9	1	11	29
04:30 PM	2	1	2	5	0	5	5	10	0	1	0	1	5	16	0	21	37
04:45 PM	1	2	1	4	0	9	0	9	0	1	0	1	0	9	0	9	23
Total	5	4	7	16	0	35	8	43	4	6	0	10	7	52	1	60	129
05:00 PM	0	0	0	0	0	9	3	12	0	0	0	0	0	17	0	17	29
05:15 PM	2	0	1	3	0	11	1	12	1	0	0	1	1	11	2	14	30
05:30 PM	3	2	2	7	0	10	2	12	0	0	0	0	2	13	0	15	34
05:45 PM	0	0	1	1	0	8	0	8	0	0	1	1	0	1	1	2	12
Total	5	2	4	11	0	38	6	44	1	0	1	2	3	42	3	48	105
Grand Total	10	6	11	27	0	73	14	87	5	6	1	12	10	94	4	108	234
Apprch %	37	22.2	40.7		0	83.9	16.1		41.7	50	8.3		9.3	87	3.7		
Total %	4.3	2.6	4.7	11.5	0	31.2	6	37.2	2.1	2.6	0.4	5.1	4.3	40.2	1.7	46.2	

	Snyder Road Southbound				Evan Hewes Highway Westbound				Snyder Road Northbound				Evan Hewes Highway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	**4**	4	0	8	3	11	**4**	**2**	0	**6**	1	**18**	0	19	**40**
04:15 PM	**2**	1	0	3	0	**13**	0	**13**	0	2	0	2	1	9	**1**	11	29
04:30 PM	2	1	2	**5**	0	5	**5**	10	0	1	0	1	**5**	16	0	**21**	37
04:45 PM	1	**2**	1	4	0	9	0	9	0	1	0	1	0	9	0	9	23
Total Volume	5	4	7	16	0	35	8	43	4	6	0	10	7	52	1	60	129
% App. Total	31.2	25	43.8		0	81.4	18.6		40	60	0		11.7	86.7	1.7		
PHF	.625	.500	.438	.800	.000	.673	.400	.827	.250	.750	.000	.417	.350	.722	.250	.714	.806

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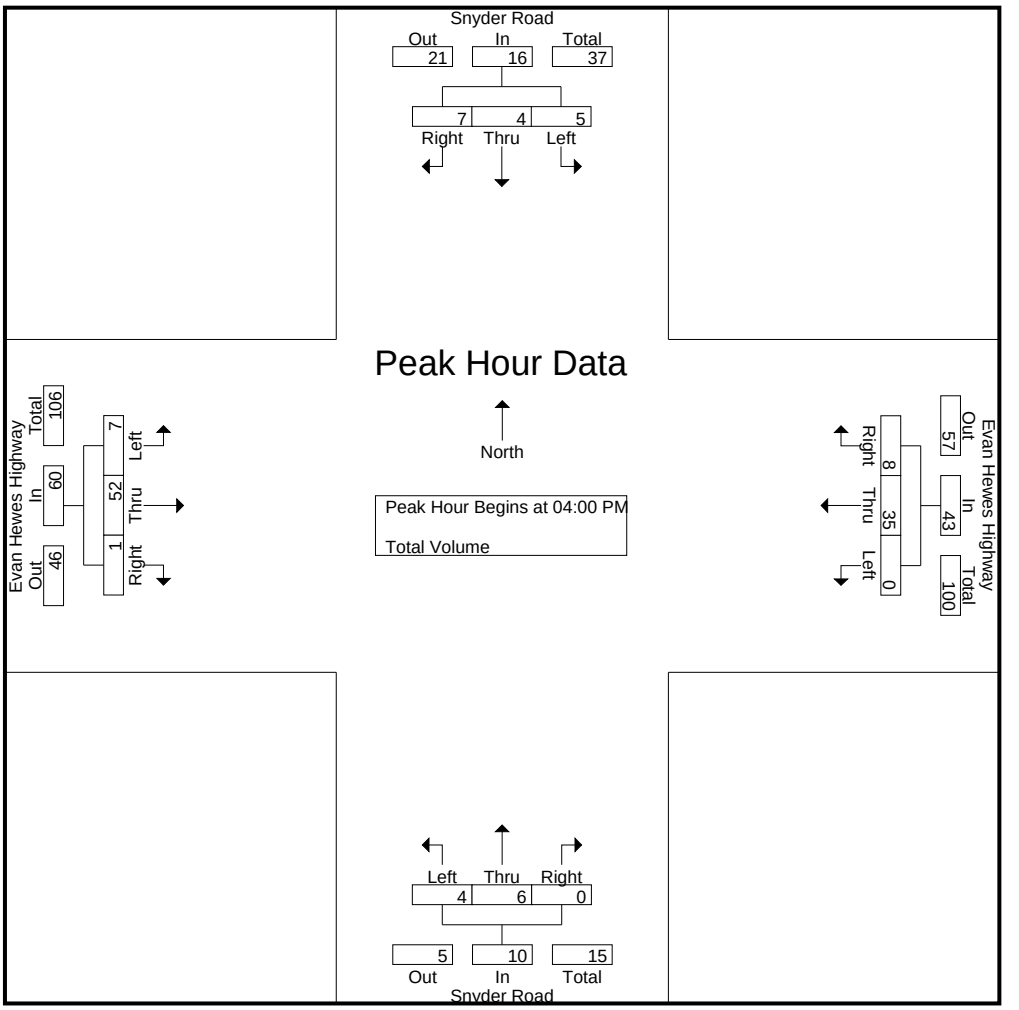
County of Imperial
N/S: Snyder Road
E/W: Evan Hewes Highway (SR-115)
Weather: Clear

File Name : 05_CIM_Snyder_Even PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:00 PM				04:30 PM			
+0 mins.	0	0	**4**	4	0	9	0	9	**4**	**2**	0	**6**	**5**	16	0	**21**
+15 mins.	**2**	1	0	3	0	9	**3**	**12**	0	2	0	2	0	9	0	9
+30 mins.	2	1	2	**5**	0	**11**	1	12	0	1	0	1	0	**17**	0	17
+45 mins.	1	**2**	1	4	0	10	2	12	0	1	0	1	1	11	**2**	14
Total Volume	5	4	7	16	0	39	6	45	4	6	0	10	6	53	2	61
% App. Total	31.2	25	43.8		0	86.7	13.3		40	60	0		9.8	86.9	3.3	
PHF	.625	.500	.438	.800	.000	.886	.500	.938	.250	.750	.000	.417	.300	.779	.250	.726

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County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: Nelson Pit Road
Weather: Clear

File Name : 08_CIM_Evan_Nelson AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Evan Hewes Highway Southbound				Nelson Pit Road Westbound				Evan Hewes Highway Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	6	0	6	0	0	0	0	0	13	0	13	0	0	0	0	19
07:15 AM	0	7	0	7	0	0	0	0	1	9	0	10	0	1	0	1	18
07:30 AM	0	11	0	11	0	0	0	0	0	16	0	16	0	0	0	0	27
07:45 AM	1	13	0	14	0	0	0	0	0	10	0	10	0	0	1	1	25
Total	1	37	0	38	0	0	0	0	1	48	0	49	0	1	1	2	89
08:00 AM	0	11	0	11	0	0	0	0	0	11	0	11	0	0	0	0	22
08:15 AM	0	6	0	6	0	0	0	0	0	10	0	10	0	0	0	0	16
08:30 AM	0	9	0	9	0	0	0	0	0	7	0	7	0	0	0	0	16
08:45 AM	0	8	0	8	0	0	0	0	0	5	0	5	0	0	0	0	13
Total	0	34	0	34	0	0	0	0	0	33	0	33	0	0	0	0	67
Grand Total	1	71	0	72	0	0	0	0	1	81	0	82	0	1	1	2	156
Apprch %	1.4	98.6	0		0	0	0		1.2	98.8	0		0	50	50		
Total %	0.6	45.5	0	46.2	0	0	0	0	0.6	51.9	0	52.6	0	0.6	0.6	1.3	

	Evan Hewes Highway Southbound				Nelson Pit Road Westbound				Evan Hewes Highway Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	7	0	7	0	0	0	0	**1**	9	0	10	0	**1**	0	**1**	18
07:30 AM	0	11	0	11	0	0	0	0	0	**16**	0	**16**	0	0	0	0	**27**
07:45 AM	**1**	**13**	0	**14**	0	0	0	0	0	10	0	10	0	0	**1**	1	25
08:00 AM	0	11	0	11	0	0	0	0	0	11	0	11	0	0	0	0	22
Total Volume	1	42	0	43	0	0	0	0	1	46	0	47	0	1	1	2	92
% App. Total	2.3	97.7	0		0	0	0		2.1	97.9	0		0	50	50		
PHF	.250	.808	.000	.768	.000	.000	.000	.000	.250	.719	.000	.734	.000	.250	.250	.500	.852

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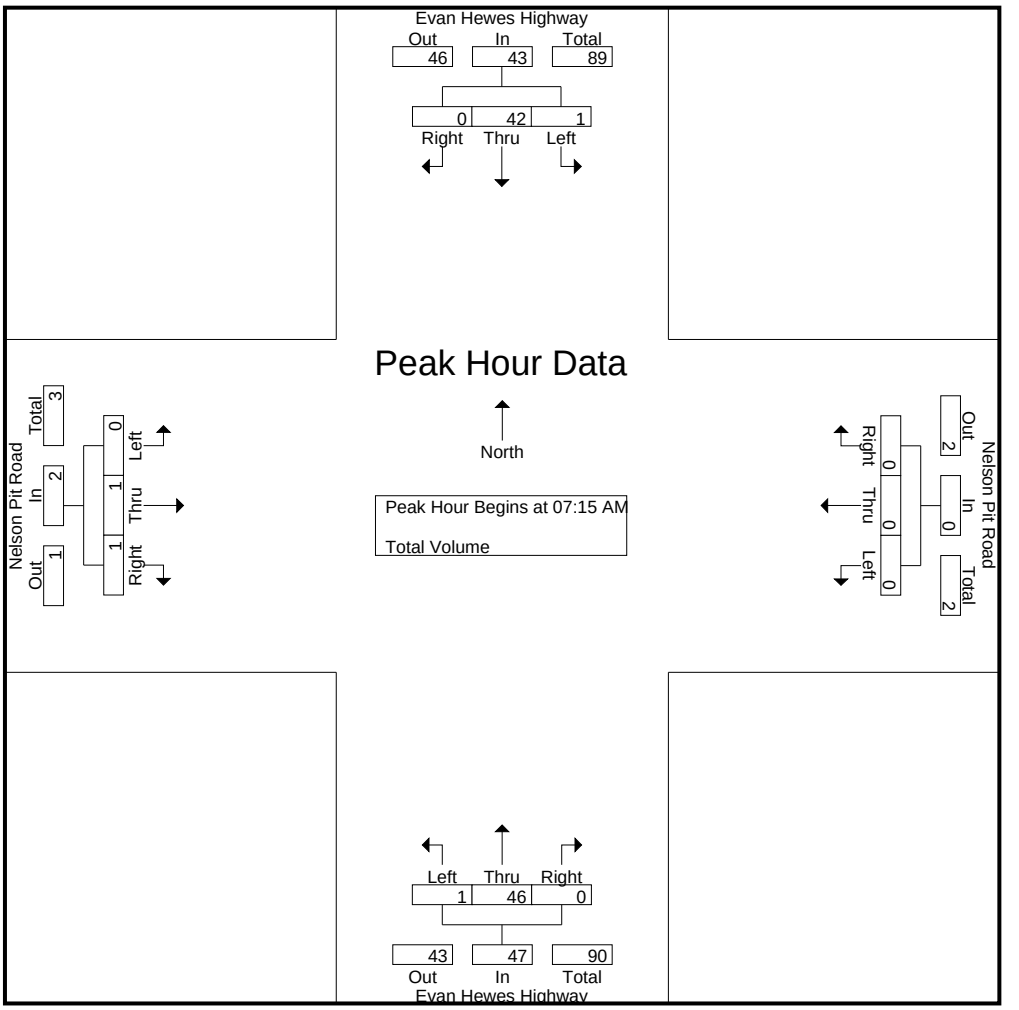
County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: Nelson Pit Road
Weather: Clear

File Name : 08_CIM_Evan_Nelson AM
Site Code : 99920467
Start Date : 12/18/2020



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	7	0	7	0	0	0	0	0	13	0	13	0	0	0	0
+15 mins.	0	11	0	11	0	0	0	0	**1**	9	0	10	0	**1**	0	**1**
+30 mins.	**1**	**13**	0	**14**	0	0	0	0	0	**16**	0	**16**	0	0	0	0
+45 mins.	0	11	0	11	0	0	0	0	0	10	0	10	0	0	**1**	1
Total Volume	1	42	0	43	0	0	0	0	1	48	0	49	0	1	1	2
% App. Total	2.3	97.7	0		0	0	0		2	98	0		0	50	50	
PHF	.250	.808	.000	.768	.000	.000	.000	.000	.250	.750	.000	.766	.000	.250	.250	.500

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County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: Nelson Pit Road
Weather: Clear

File Name : 08_CIM_Evan_Nelson PM
Site Code : 99920467
Start Date : 12/18/2020

Groups Printed- Total Volume

	Evan Hewes Highway Southbound				Nelson Pit Road Westbound				Evan Hewes Highway Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	18	0	18	0	0	0	0	0	7	0	7	0	0	0	0	25
04:15 PM	0	12	0	12	0	0	0	0	0	12	0	12	0	0	0	0	24
04:30 PM	0	8	0	8	0	0	0	0	0	12	0	12	0	0	0	0	20
04:45 PM	0	10	0	10	0	0	0	0	0	7	0	7	0	1	0	1	18
Total	0	48	0	48	0	0	0	0	0	38	0	38	0	1	0	1	87
05:00 PM	0	12	0	12	0	0	0	0	0	10	0	10	0	0	0	0	22
05:15 PM	0	9	0	9	0	0	0	0	0	12	0	12	0	0	0	0	21
05:30 PM	0	13	0	13	0	0	0	0	0	12	0	12	0	0	0	0	25
05:45 PM	0	1	0	1	0	0	0	0	0	5	0	5	0	0	0	0	6
Total	0	35	0	35	0	0	0	0	0	39	0	39	0	0	0	0	74
Grand Total	0	83	0	83	0	0	0	0	0	77	0	77	0	1	0	1	161
Apprch %	0	100	0		0	0	0		0	100	0		0	100	0		
Total %	0	51.6	0	51.6	0	0	0	0	0	47.8	0	47.8	0	0.6	0	0.6	

	Evan Hewes Highway Southbound				Nelson Pit Road Westbound				Evan Hewes Highway Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**18**	0	**18**	0	0	0	0	0	7	0	7	0	0	0	0	**25**
04:15 PM	0	12	0	12	0	0	0	0	0	**12**	0	**12**	0	0	0	0	24
04:30 PM	0	8	0	8	0	0	0	0	0	12	0	12	0	0	0	0	20
04:45 PM	0	10	0	10	0	0	0	0	0	7	0	7	0	**1**	0	**1**	18
Total Volume	0	48	0	48	0	0	0	0	0	38	0	38	0	1	0	1	87
% App. Total	0	100	0		0	0	0		0	100	0		0	100	0		
PHF	.000	.667	.000	.667	.000	.000	.000	.000	.000	.792	.000	.792	.000	.250	.000	.250	.870

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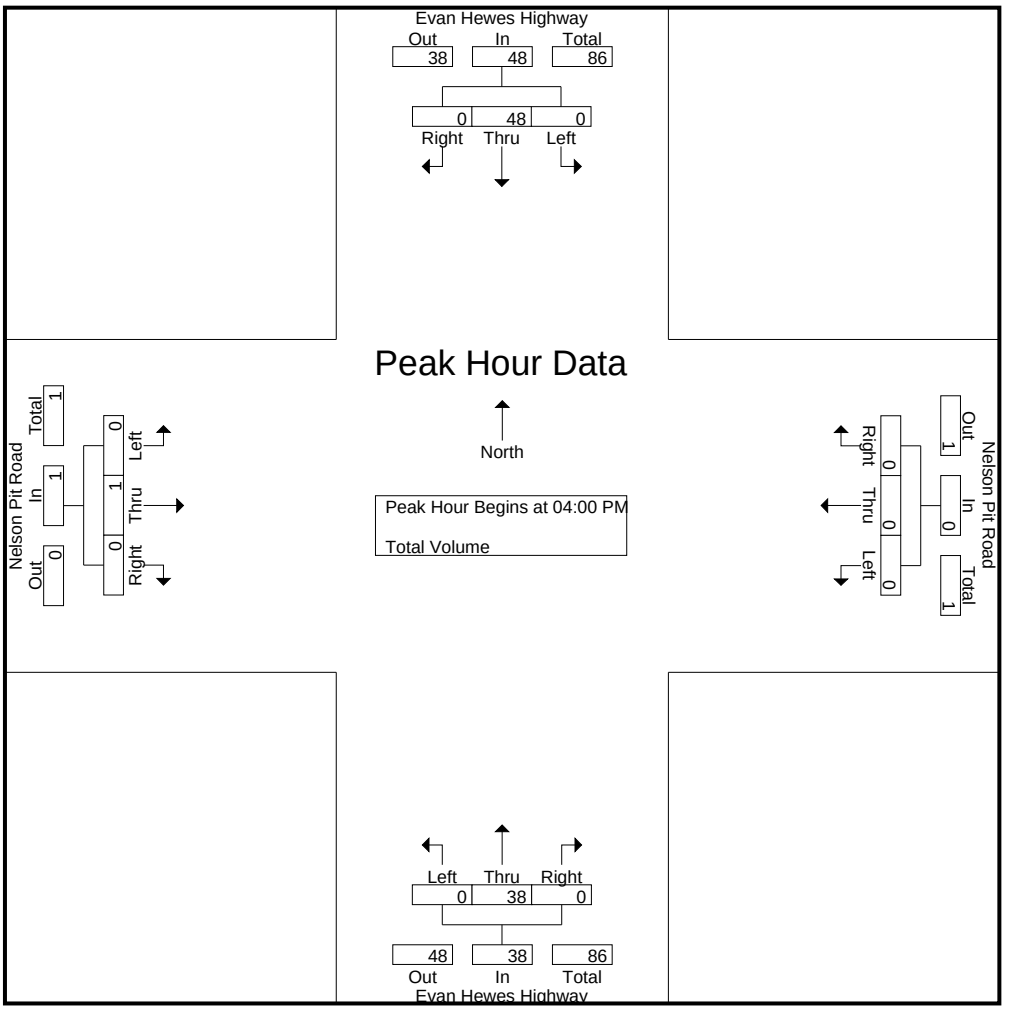
County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: Nelson Pit Road
Weather: Clear

File Name : 08_CIM_Evan_Nelson PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:15 PM				04:00 PM			
+0 mins.	0	**18**	0	**18**	0	0	0	0	0	**12**	0	**12**	0	0	0	0
+15 mins.	0	12	0	12	0	0	0	0	0	12	0	12	0	0	0	0
+30 mins.	0	8	0	8	0	0	0	0	0	7	0	7	0	0	0	0
+45 mins.	0	10	0	10	0	0	0	0	0	10	0	10	0	**1**	0	**1**
Total Volume	0	48	0	48	0	0	0	0	0	41	0	41	0	1	0	1
% App. Total	0	100	0		0	0	0		0	100	0		0	100	0	
PHF	.000	.667	.000	.667	.000	.000	.000	.000	.000	.854	.000	.854	.000	.250	.000	.250

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County of Imperial
N/S: Fust Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 16_CIM_Fust_Nelson AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Fust Road Southbound				Nelson Pit Road Westbound				Fust Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
07:45 AM	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	2	3
Total	0	0	0	0	1	1	0	2	0	0	1	1	1	2	0	3	6
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	1	0	1	0	0	1	1	0	0	1	1	0	0	0	0	3
Total	0	1	0	1	0	0	1	1	0	0	1	1	0	1	0	1	4
Grand Total	0	1	0	1	1	1	1	3	0	0	2	2	1	3	0	4	10
Apprch %	0	100	0		33.3	33.3	33.3		0	0	100		25	75	0		
Total %	0	10	0	10	10	10	10	30	0	0	20	20	10	30	0	40	

	Fust Road Southbound				Nelson Pit Road Westbound				Fust Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	**1**	0	1	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	1
07:45 AM	0	0	0	0	**1**	0	0	1	0	0	0	0	**1**	1	0	**2**	**3**
Total Volume	0	0	0	0	1	1	0	2	0	0	1	1	1	2	0	3	6
% App. Total	0	0	0		50	50	0		0	0	100		33.3	66.7	0		
PHF	.000	.000	.000	.000	.250	.250	.000	.500	.000	.000	.250	.250	.250	.500	.000	.375	.500

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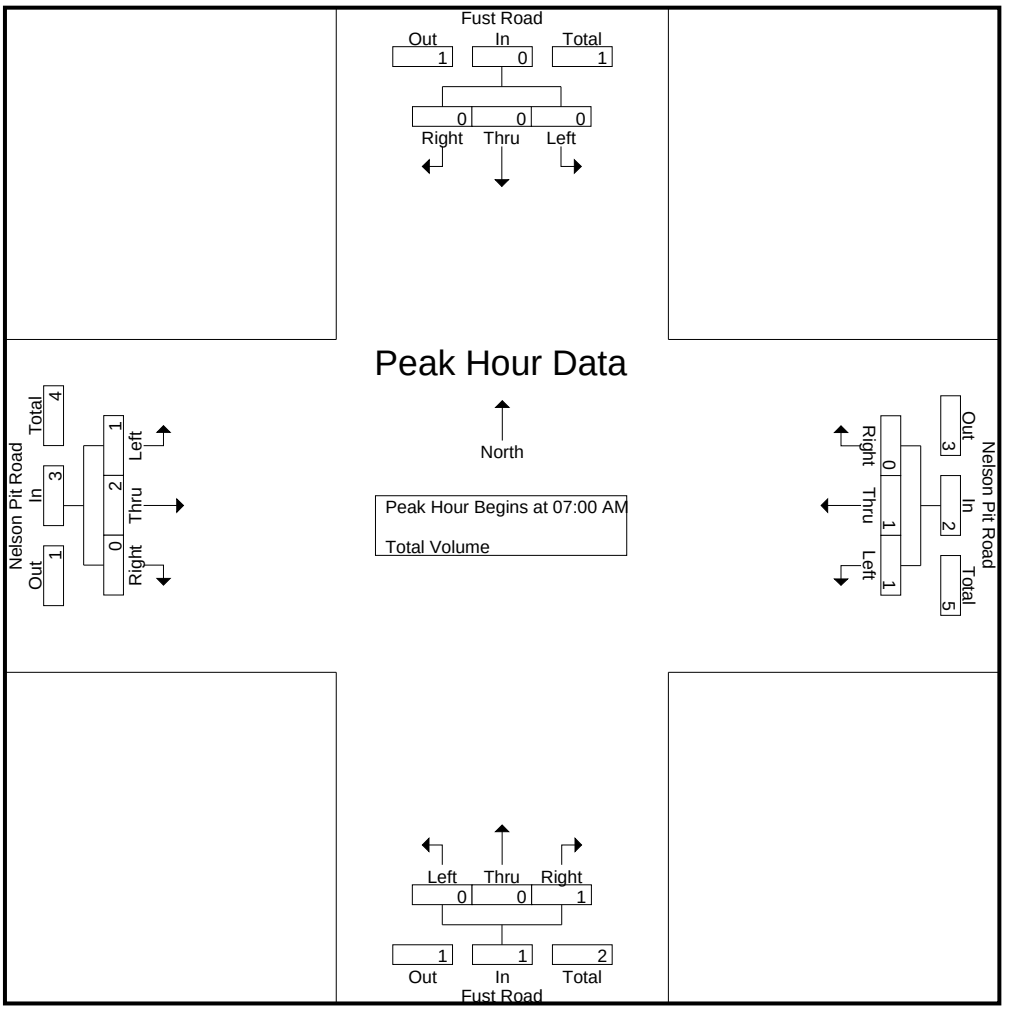
County of Imperial
N/S: Fust Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 16_CIM_Fust_Nelson AM
Site Code : 99920467
Start Date : 12/18/2020



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	**1**	0	1
+30 mins.	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0
+45 mins.	0	**1**	0	**1**	**1**	0	0	1	0	0	0	0	**1**	1	0	**2**
Total Volume	0	1	0	1	1	1	0	2	0	0	1	1	1	2	0	3
% App. Total	0	100	0		50	50	0		0	0	100		33.3	66.7	0	
PHF	.000	.250	.000	.250	.250	.250	.000	.500	.000	.000	.250	.250	.250	.500	.000	.375

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County of Imperial
N/S: Fust Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 16_CIM_Fust_Nelson PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Fust Road Southbound				Nelson Pit Road Westbound				Fust Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	1	1	2	0	0	1	1	0	1	0	1	4
Apprch %	0	0	0		0	50	50		0	0	100		0	100	0		
Total %	0	0	0	0	0	25	25	50	0	0	25	25	0	25	0	25	

	Fust Road Southbound				Nelson Pit Road Westbound				Fust Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	**1**
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	1
Total Volume	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1	3
% App. Total	0	0	0		0	100	0		0	0	100		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.250	.250	.000	.250	.000	.250	.750

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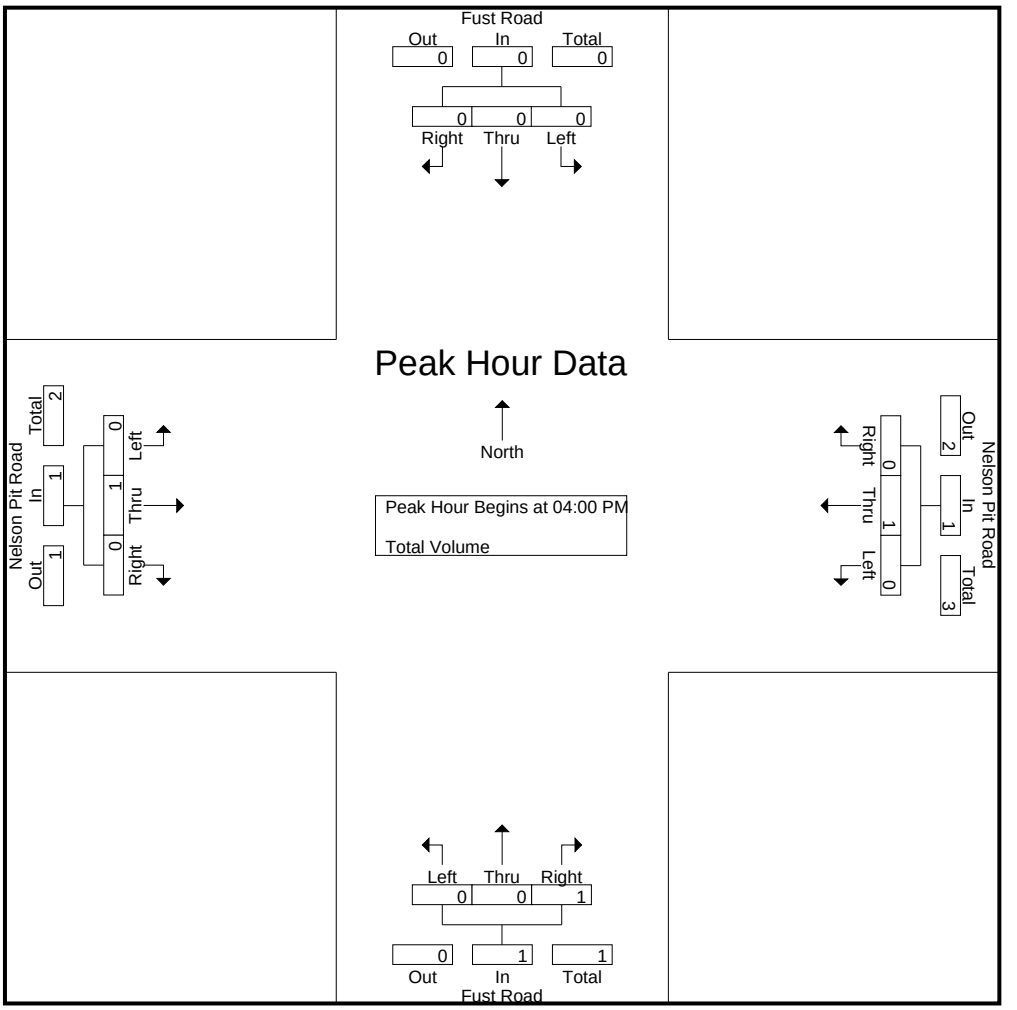
County of Imperial
N/S: Fust Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 16_CIM_Fust_Nelson PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
Total Volume	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1
% App. Total	0	0	0		0	100	0		0	0	100		0	100	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.250	.250	.000	.250	.000	.250

Counts Unlimited, Inc.
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County of Imperial
N/S: Miller Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 07_CIM_Miller_Nelson AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Miller Road Southbound				Nelson Pit Road Westbound				Miller Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0	4
07:15 AM	0	2	1	3	0	1	0	1	0	2	1	3	0	1	0	1	8
07:30 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
07:45 AM	0	1	1	2	0	0	0	0	0	8	3	11	1	0	0	1	14
Total	0	4	2	6	0	1	0	1	0	16	4	20	1	1	0	2	29
08:00 AM	1	2	0	3	1	0	0	1	0	3	0	3	0	1	0	1	8
08:15 AM	0	5	0	5	0	0	0	0	0	1	1	2	0	0	0	0	7
08:30 AM	0	2	0	2	0	0	0	0	0	4	0	4	0	0	0	0	6
08:45 AM	2	2	0	4	2	0	0	2	0	4	0	4	0	0	1	1	11
Total	3	11	0	14	3	0	0	3	0	12	1	13	0	1	1	2	32
Grand Total	3	15	2	20	3	1	0	4	0	28	5	33	1	2	1	4	61
Apprch %	15	75	10		75	25	0		0	84.8	15.2		25	50	25		
Total %	4.9	24.6	3.3	32.8	4.9	1.6	0	6.6	0	45.9	8.2	54.1	1.6	3.3	1.6	6.6	

	Miller Road Southbound				Nelson Pit Road Westbound				Miller Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	1	**1**	2	0	0	0	0	0	**8**	**3**	**11**	**1**	0	0	**1**	**14**
08:00 AM	**1**	2	0	3	**1**	0	0	**1**	0	3	0	3	0	**1**	0	1	8
08:15 AM	0	**5**	0	**5**	0	0	0	0	0	1	1	2	0	0	0	0	7
08:30 AM	0	2	0	2	0	0	0	0	0	4	0	4	0	0	0	0	6
Total Volume	1	10	1	12	1	0	0	1	0	16	4	20	1	1	0	2	35
% App. Total	8.3	83.3	8.3		100	0	0		0	80	20		50	50	0		
PHF	.250	.500	.250	.600	.250	.000	.000	.250	.000	.500	.333	.455	.250	.250	.000	.500	.625

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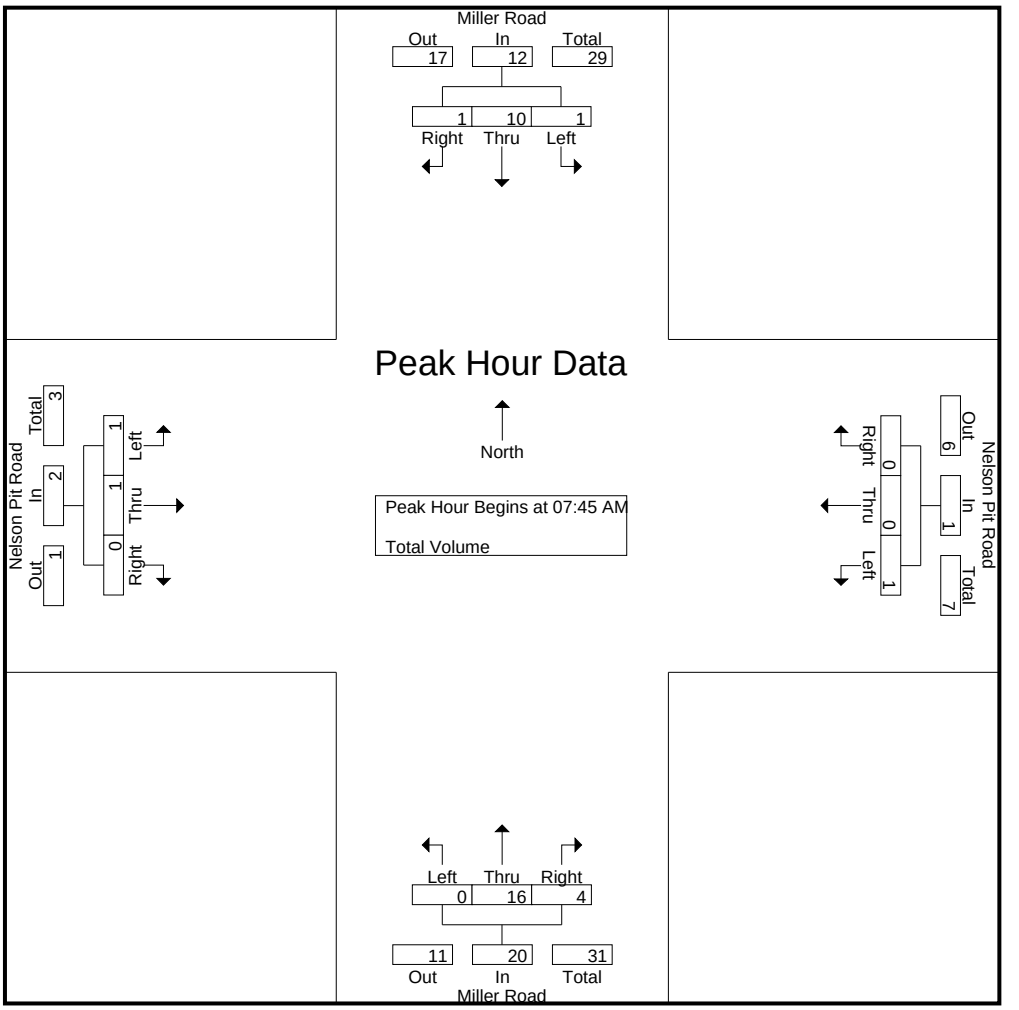
County of Imperial
N/S: Miller Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 07_CIM_Miller_Nelson AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:00 AM				07:15 AM			
+0 mins.	1	2	0	3	1	0	0	1	0	3	0	3	0	**1**	0	**1**
+15 mins.	0	**5**	0	**5**	0	0	0	0	0	2	1	3	0	0	0	0
+30 mins.	0	2	0	2	0	0	0	0	0	3	0	3	**1**	0	0	1
+45 mins.	**2**	2	0	4	**2**	0	0	**2**	0	**8**	**3**	**11**	0	1	0	1
Total Volume	3	11	0	14	3	0	0	3	0	16	4	20	1	2	0	3
% App. Total	21.4	78.6	0		100	0	0		0	80	20		33.3	66.7	0	
PHF	.375	.550	.000	.700	.375	.000	.000	.375	.000	.500	.333	.455	.250	.500	.000	.750

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County of Imperial
N/S: Miller Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 07_CIM_Miller_Nelson PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Miller Road Southbound				Nelson Pit Road Westbound				Miller Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	2	0	2	0	0	1	1	0	2	0	2	0	0	0	0	5
04:15 PM	1	2	0	3	0	0	1	1	0	0	0	0	0	0	0	0	4
04:30 PM	0	4	0	4	0	0	0	0	0	1	0	1	0	0	0	0	5
04:45 PM	0	0	0	0	1	0	1	2	1	1	0	2	0	1	0	1	5
Total	1	8	0	9	1	0	3	4	1	4	0	5	0	1	0	1	19
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
05:15 PM	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
05:30 PM	1	1	0	2	0	0	1	1	0	0	0	0	0	0	0	0	3
05:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	2	1	0	3	0	0	1	1	0	2	0	2	0	0	1	1	7
Grand Total	3	9	0	12	1	0	4	5	1	6	0	7	0	1	1	2	26
Apprch %	25	75	0		20	0	80		14.3	85.7	0		0	50	50		
Total %	11.5	34.6	0	46.2	3.8	0	15.4	19.2	3.8	23.1	0	26.9	0	3.8	3.8	7.7	

	Miller Road Southbound				Nelson Pit Road Westbound				Miller Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	2	0	2	0	0	**1**	1	0	**2**	0	**2**	0	0	0	0	**5**
04:15 PM	**1**	2	0	3	0	0	1	1	0	0	0	0	0	0	0	0	4
04:30 PM	0	**4**	0	**4**	0	0	0	0	0	1	0	1	0	0	0	0	5
04:45 PM	0	0	0	0	**1**	0	1	**2**	**1**	1	0	2	0	**1**	0	**1**	5
Total Volume	1	8	0	9	1	0	3	4	1	4	0	5	0	1	0	1	19
% App. Total	11.1	88.9	0		25	0	75		20	80	0		0	100	0		
PHF	.250	.500	.000	.563	.250	.000	.750	.500	.250	.500	.000	.625	.000	.250	.000	.250	.950

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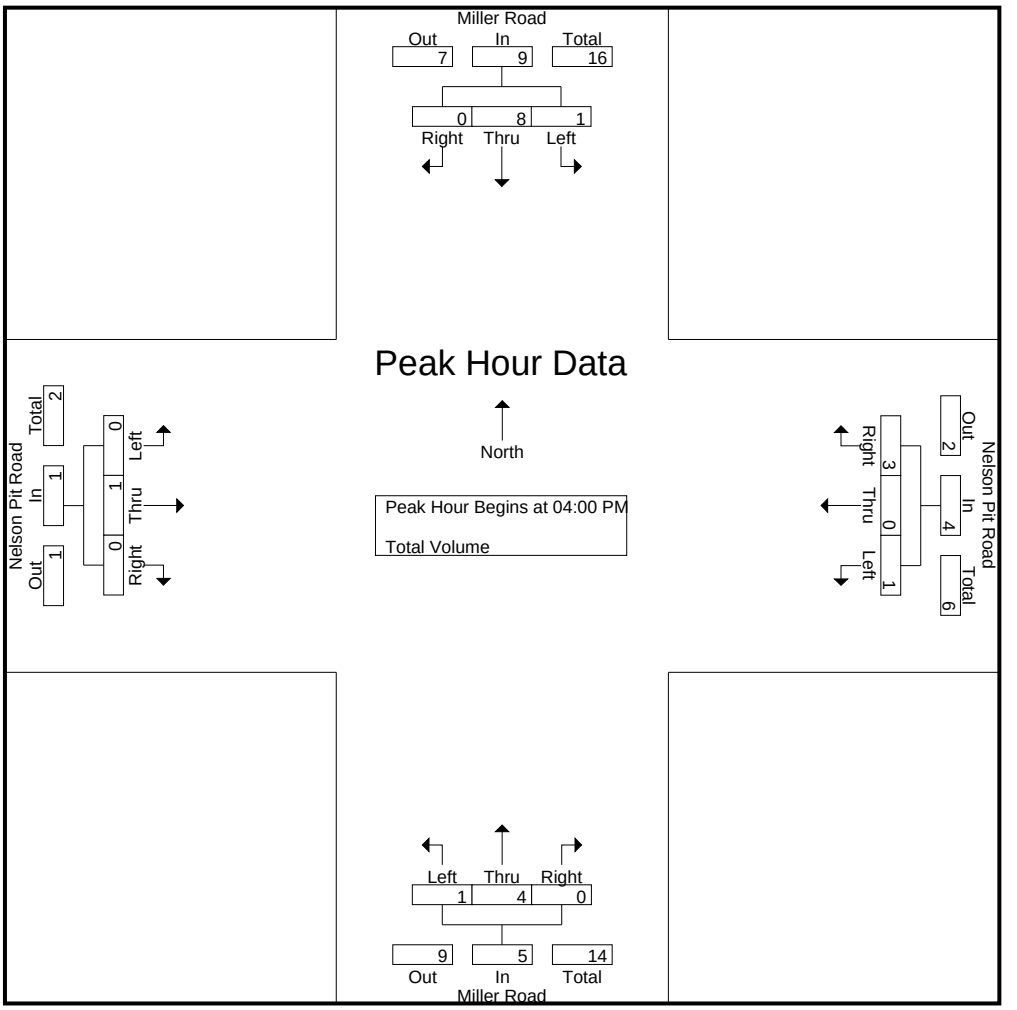
County of Imperial
N/S: Miller Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 07_CIM_Miller_Nelson PM
Site Code : 99920467
Start Date : 12/18/2020



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:15 PM			
+0 mins.	0	2	0	2	0	0	**1**	1	0	**2**	0	**2**	0	0	0	0
+15 mins.	**1**	2	0	3	0	0	1	1	0	0	0	0	0	0	0	0
+30 mins.	0	**4**	0	**4**	0	0	0	0	0	1	0	1	0	**1**	0	**1**
+45 mins.	0	0	0	0	**1**	0	1	**2**	**1**	1	0	2	0	0	**1**	1
Total Volume	1	8	0	9	1	0	3	4	1	4	0	5	0	1	1	2
% App. Total	11.1	88.9	0		25	0	75		20	80	0		0	50	50	
PHF	.250	.500	.000	.563	.250	.000	.750	.500	.250	.500	.000	.625	.000	.250	.250	.500

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County of Imperial
N/S: Graeser Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 04_CIM_Graeser_Nelson AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Graeser Road Southbound				Nelson Pit Road Westbound				Graeser Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4	5
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
Grand Total	0	0	0	0	0	3	0	3	0	0	0	0	0	7	0	7	10
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	30	0	30	0	0	0	0	0	70	0	70	

	Graeser Road Southbound				Nelson Pit Road Westbound				Graeser Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	**2**	0	**2**	**3**
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	5	0	5	7
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.625	.000	.625	.583

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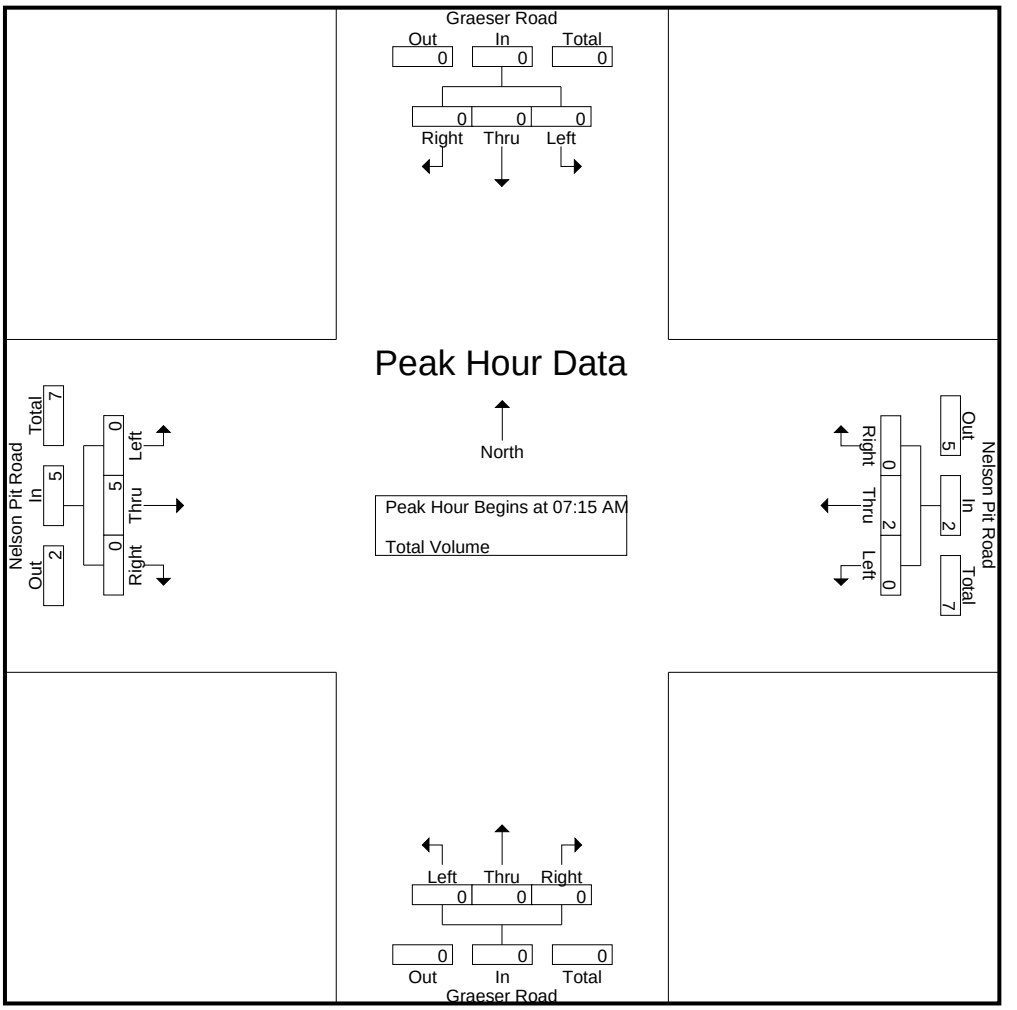
County of Imperial
N/S: Graeser Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 04_CIM_Graeser_Nelson AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:00 AM				07:15 AM			
+0 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	**2**	0	**2**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	5	0	5
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.625	.000	.625

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County of Imperial
N/S: Graeser Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 04_CIM_Graeser_Nelson PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Graeser Road Southbound				Nelson Pit Road Westbound				Graeser Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	1	1	2	0	3	0	3	0	0	0	0	0	1	0	1	6
05:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	1	0	2	0	0	0	0	0	3	0	3	5
Grand Total	0	1	1	2	1	4	0	5	0	0	0	0	0	4	0	4	11
Apprch %	0	50	50		20	80	0		0	0	0		0	100	0		
Total %	0	9.1	9.1	18.2	9.1	36.4	0	45.5	0	0	0	0	0	36.4	0	36.4	

	Graeser Road Southbound				Nelson Pit Road Westbound				Graeser Road Northbound				Nelson Pit Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0	**2**
05:00 PM	0	0	0	0	**1**	0	0	1	0	0	0	0	0	**1**	0	**1**	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	1	3	0	4	0	0	0	0	0	3	0	3	7
% App. Total	0	0	0		25	75	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.250	.375	.000	.500	.000	.000	.000	.000	.000	.750	.000	.750	.875

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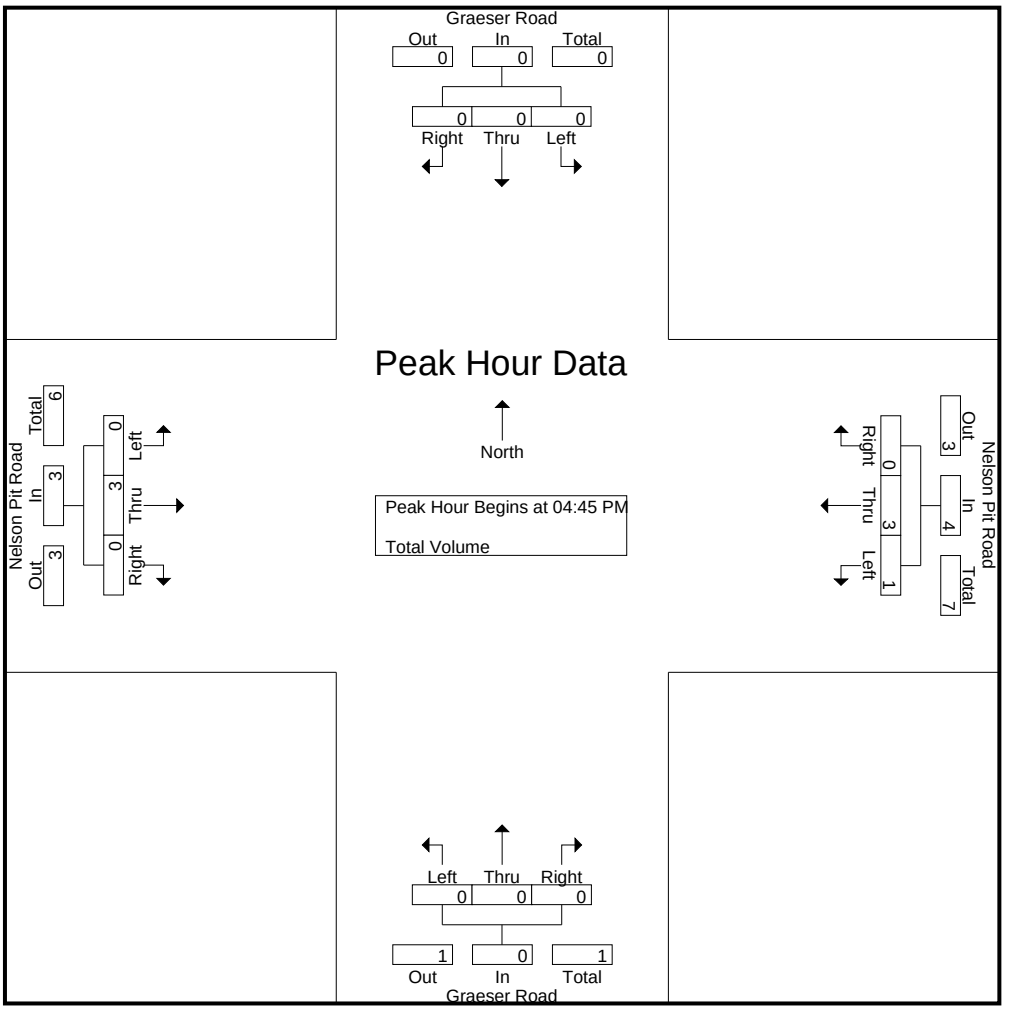
County of Imperial
N/S: Graeser Road
E/W: Nelson Pit Road
Weather: Clear

File Name : 04_CIM_Graeser_Nelson PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:00 PM				04:45 PM			
+0 mins.	0	**1**	**1**	**2**	0	1	0	1	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+30 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	1	0	1
+45 mins.	0	0	0	0	**1**	0	0	1	0	0	0	0	0	1	0	1
Total Volume	0	1	1	2	1	3	0	4	0	0	0	0	0	3	0	3
% App. Total	0	50	50		25	75	0		0	0	0		0	100	0	
PHF	.000	.250	.250	.250	.250	.375	.000	.500	.000	.000	.000	.000	.000	.750	.000	.750

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County of Imperial
N/S: Snyder Road/Bonds Corner Road
E/W: Walnut Avenue/Ogier Road
Weather: Clear

File Name : 03_CIM_Snyder_Walnut AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Snyder Road Southbound				Ogier Road Westbound				Bonds Corner Road Northbound				Walnut Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	0	2	1	0	0	1	2	9	0	11	0	1	4	5	19
07:15 AM	2	2	1	5	0	0	0	0	3	2	0	5	1	0	4	5	15
07:30 AM	1	0	1	2	0	0	0	0	1	6	0	7	0	0	5	5	14
07:45 AM	0	2	1	3	0	0	0	0	1	1	3	5	0	1	4	5	13
Total	3	6	3	12	1	0	0	1	7	18	3	28	1	2	17	20	61
08:00 AM	1	5	1	7	0	2	1	3	4	3	0	7	1	0	2	3	20
08:15 AM	0	2	0	2	0	1	0	1	2	3	0	5	0	1	6	7	15
08:30 AM	0	3	0	3	0	0	0	0	5	4	2	11	0	0	2	2	16
08:45 AM	0	6	0	6	1	1	0	2	3	5	1	9	0	1	4	5	22
Total	1	16	1	18	1	4	1	6	14	15	3	32	1	2	14	17	73
Grand Total	4	22	4	30	2	4	1	7	21	33	6	60	2	4	31	37	134
Apprch %	13.3	73.3	13.3		28.6	57.1	14.3		35	55	10		5.4	10.8	83.8		
Total %	3	16.4	3	22.4	1.5	3	0.7	5.2	15.7	24.6	4.5	44.8	1.5	3	23.1	27.6	

	Snyder Road Southbound				Ogier Road Westbound				Bonds Corner Road Northbound				Walnut Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	**1**	5	**1**	**7**	0	**2**	**1**	**3**	4	3	0	7	**1**	0	2	3	20
08:15 AM	0	2	0	2	0	1	0	1	2	3	0	5	0	**1**	**6**	**7**	15
08:30 AM	0	3	0	3	0	0	0	0	**5**	4	**2**	**11**	0	0	2	2	16
08:45 AM	0	**6**	0	6	**1**	1	0	2	3	**5**	1	9	0	1	4	5	**22**
Total Volume	1	16	1	18	1	4	1	6	14	15	3	32	1	2	14	17	73
% App. Total	5.6	88.9	5.6		16.7	66.7	16.7		43.8	46.9	9.4		5.9	11.8	82.4		
PHF	.250	.667	.250	.643	.250	.500	.250	.500	.700	.750	.375	.727	.250	.500	.583	.607	.830

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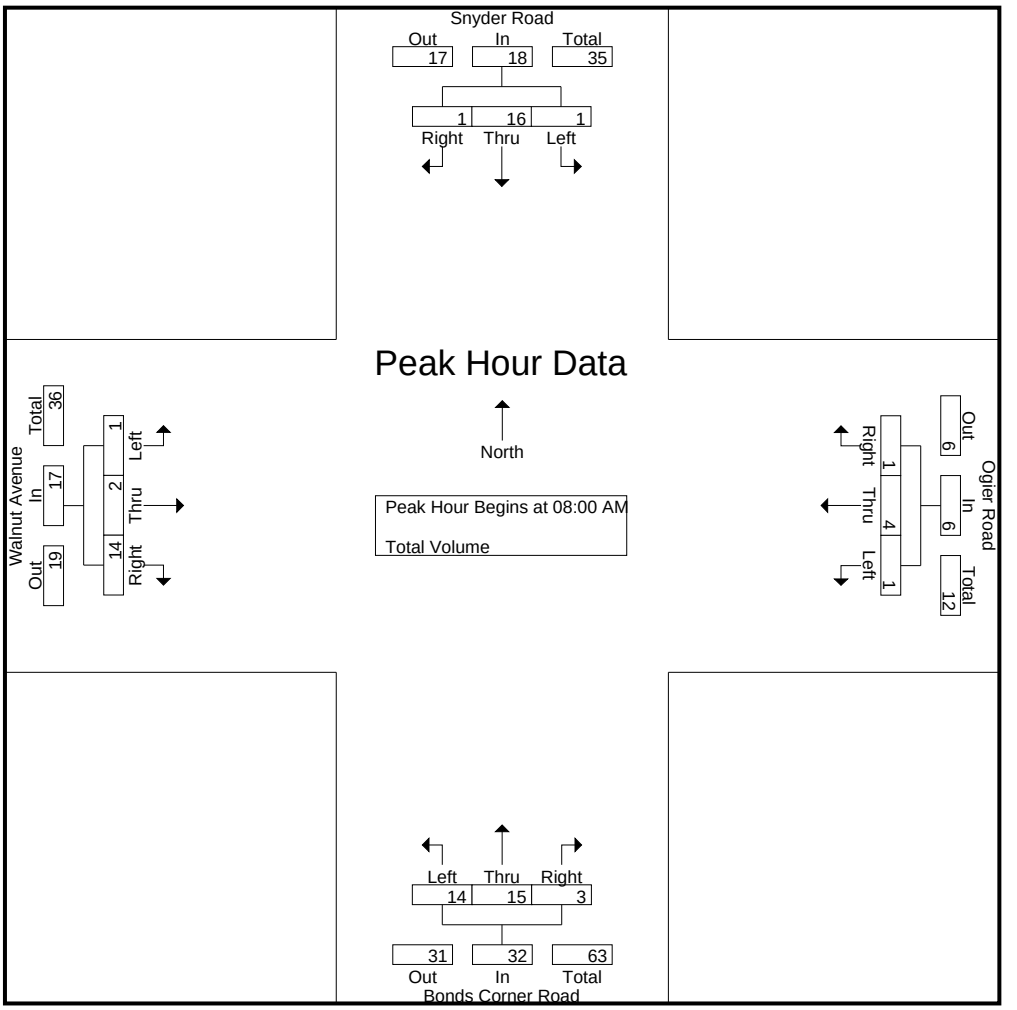
County of Imperial
N/S: Snyder Road/Bonds Corner Road
E/W: Walnut Avenue/Ogier Road
Weather: Clear

File Name : 03_CIM_Snyder_Walnut AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				08:00 AM				07:00 AM			
+0 mins.	**1**	5	**1**	**7**	0	**2**	**1**	**3**	4	3	0	7	0	**1**	4	**5**
+15 mins.	0	2	0	2	0	1	0	1	2	3	0	5	**1**	0	4	5
+30 mins.	0	3	0	3	0	0	0	0	**5**	4	**2**	**11**	0	0	**5**	5
+45 mins.	0	**6**	0	6	**1**	1	0	2	3	**5**	1	9	0	1	4	5
Total Volume	1	16	1	18	1	4	1	6	14	15	3	32	1	2	17	20
% App. Total	5.6	88.9	5.6		16.7	66.7	16.7		43.8	46.9	9.4		5	10	85	
PHF	.250	.667	.250	.643	.250	.500	.250	.500	.700	.750	.375	.727	.250	.500	.850	1.000

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County of Imperial
N/S: Snyder Road/Bonds Corner Road
E/W: Walnut Avenue/Ogier Road
Weather: Clear

File Name : 03_CIM_Snyder_Walnut PM
Site Code : 99920467
Start Date : 12/18/2020

Groups Printed- Total Volume

	Snyder Road Southbound				Ogier Road Westbound				Bonds Corner Road Northbound				Walnut Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	2	0	2	0	4	0	4	10	3	1	14	0	0	1	1	21
04:15 PM	0	1	0	1	1	0	1	2	4	1	0	5	0	1	3	4	12
04:30 PM	0	2	0	2	0	0	0	0	1	2	1	4	1	0	3	4	10
04:45 PM	0	4	1	5	0	0	0	0	4	2	1	7	1	0	4	5	17
Total	0	9	1	10	1	4	1	6	19	8	3	30	2	1	11	14	60
05:00 PM	0	1	0	1	2	0	0	2	0	3	1	4	0	0	0	0	7
05:15 PM	0	0	0	0	0	0	0	0	6	0	0	6	0	1	3	4	10
05:30 PM	0	3	0	3	0	0	0	0	3	2	1	6	0	0	0	0	9
05:45 PM	0	2	0	2	0	0	0	0	0	0	1	1	0	0	0	0	3
Total	0	6	0	6	2	0	0	2	9	5	3	17	0	1	3	4	29
Grand Total	0	15	1	16	3	4	1	8	28	13	6	47	2	2	14	18	89
Apprch %	0	93.8	6.2		37.5	50	12.5		59.6	27.7	12.8		11.1	11.1	77.8		
Total %	0	16.9	1.1	18	3.4	4.5	1.1	9	31.5	14.6	6.7	52.8	2.2	2.2	15.7	20.2	

	Snyder Road Southbound				Ogier Road Westbound				Bonds Corner Road Northbound				Walnut Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	2	0	2	0	**4**	0	**4**	**10**	**3**	**1**	**14**	0	0	1	1	**21**
04:15 PM	0	1	0	1	**1**	0	**1**	2	4	1	0	5	0	**1**	3	4	12
04:30 PM	0	2	0	2	0	0	0	0	1	2	1	4	**1**	0	3	4	10
04:45 PM	0	**4**	**1**	**5**	0	0	0	0	4	2	1	7	1	0	**4**	**5**	17
Total Volume	0	9	1	10	1	4	1	6	19	8	3	30	2	1	11	14	60
% App. Total	0	90	10		16.7	66.7	16.7		63.3	26.7	10		14.3	7.1	78.6		
PHF	.000	.563	.250	.500	.250	.250	.250	.375	.475	.667	.750	.536	.500	.250	.688	.700	.714

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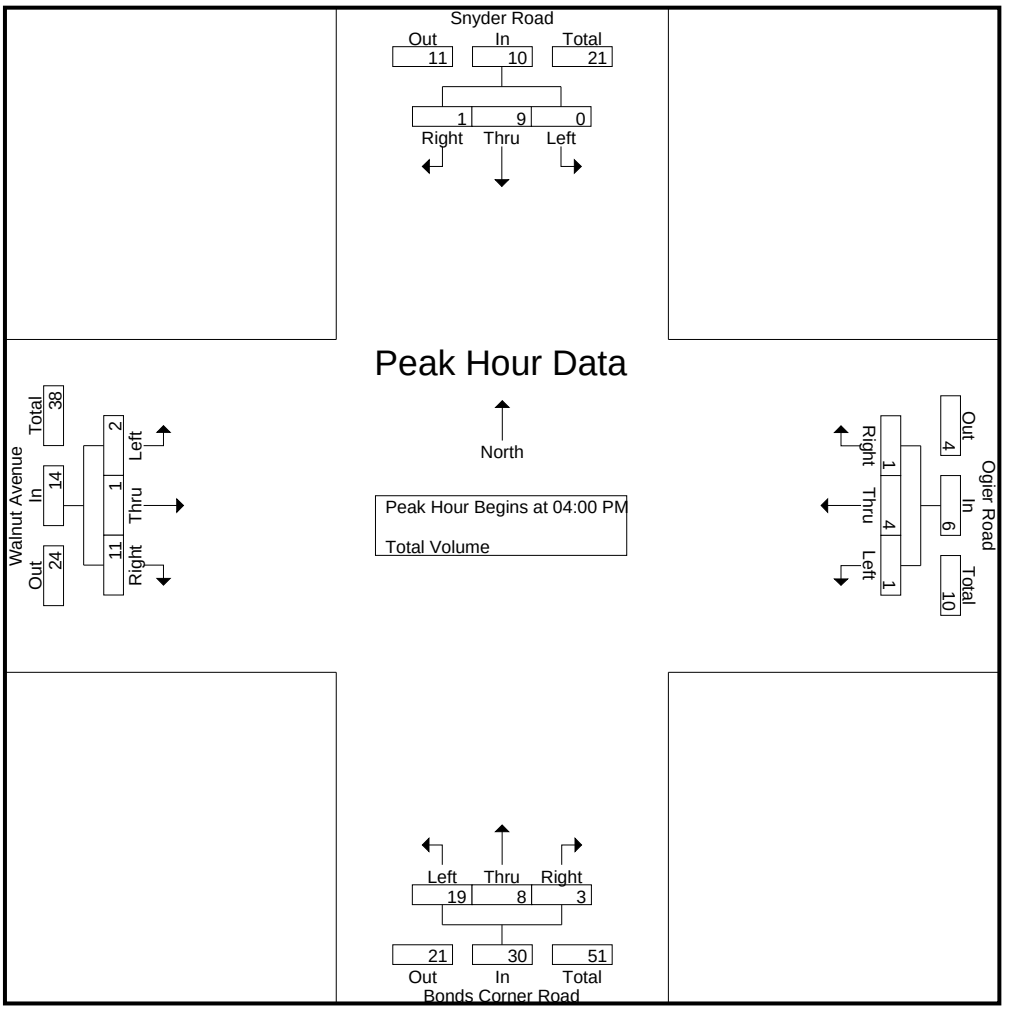
County of Imperial
N/S: Snyder Road/Bonds Corner Road
E/W: Walnut Avenue/Ogier Road
Weather: Clear

File Name : 03_CIM_Snyder_Walnut PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	2	0	2	0	**4**	0	**4**	**10**	**3**	**1**	**14**	0	0	1	1
+15 mins.	0	1	0	1	**1**	0	**1**	2	4	1	0	5	0	**1**	3	4
+30 mins.	0	2	0	2	0	0	0	0	1	2	1	4	**1**	0	3	4
+45 mins.	0	**4**	**1**	**5**	0	0	0	0	4	2	1	7	1	0	**4**	**5**
Total Volume	0	9	1	10	1	4	1	6	19	8	3	30	2	1	11	14
% App. Total	0	90	10		16.7	66.7	16.7		63.3	26.7	10		14.3	7.1	78.6	
PHF	.000	.563	.250	.500	.250	.250	.250	.375	.475	.667	.750	.536	.500	.250	.688	.700

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County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: Graeser Road
Weather: Clear

File Name : 06_CIM_Evan_Graeser AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Evan Hewes Highway Southbound				Graeser Road Westbound				Evan Hewes Highway Northbound				Graeser Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	0	2	0	0	0	0	0	11	0	11	0	0	0	0	13
07:15 AM	0	6	0	6	0	0	0	0	0	13	0	13	0	0	0	0	19
07:30 AM	0	9	0	9	0	0	0	0	0	11	0	11	0	0	0	0	20
07:45 AM	0	9	0	9	0	0	0	0	1	16	0	17	1	0	0	1	27
Total	0	26	0	26	0	0	0	0	1	51	0	52	1	0	0	1	79
08:00 AM	0	10	0	10	0	0	0	0	0	10	0	10	0	0	0	0	20
08:15 AM	1	9	0	10	1	0	0	1	0	8	0	8	0	0	0	0	19
08:30 AM	0	4	0	4	1	0	0	1	0	11	0	11	0	0	1	1	17
08:45 AM	0	6	1	7	0	0	0	0	0	4	0	4	0	0	0	0	11
Total	1	29	1	31	2	0	0	2	0	33	0	33	0	0	1	1	67
Grand Total	1	55	1	57	2	0	0	2	1	84	0	85	1	0	1	2	146
Apprch %	1.8	96.5	1.8		100	0	0		1.2	98.8	0		50	0	50		
Total %	0.7	37.7	0.7	39	1.4	0	0	1.4	0.7	57.5	0	58.2	0.7	0	0.7	1.4	

	Evan Hewes Highway Southbound				Graeser Road Westbound				Evan Hewes Highway Northbound				Graeser Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	6	0	6	0	0	0	0	0	13	0	13	0	0	0	0	19
07:30 AM	0	9	0	9	0	0	0	0	0	11	0	11	0	0	0	0	20
07:45 AM	0	9	0	9	0	0	0	0	**1**	**16**	0	**17**	**1**	0	0	**1**	**27**
08:00 AM	0	**10**	0	**10**	0	0	0	0	0	10	0	10	0	0	0	0	20
Total Volume	0	34	0	34	0	0	0	0	1	50	0	51	1	0	0	1	86
% App. Total	0	100	0		0	0	0		2	98	0		100	0	0		
PHF	.000	.850	.000	.850	.000	.000	.000	.000	.250	.781	.000	.750	.250	.000	.000	.250	.796

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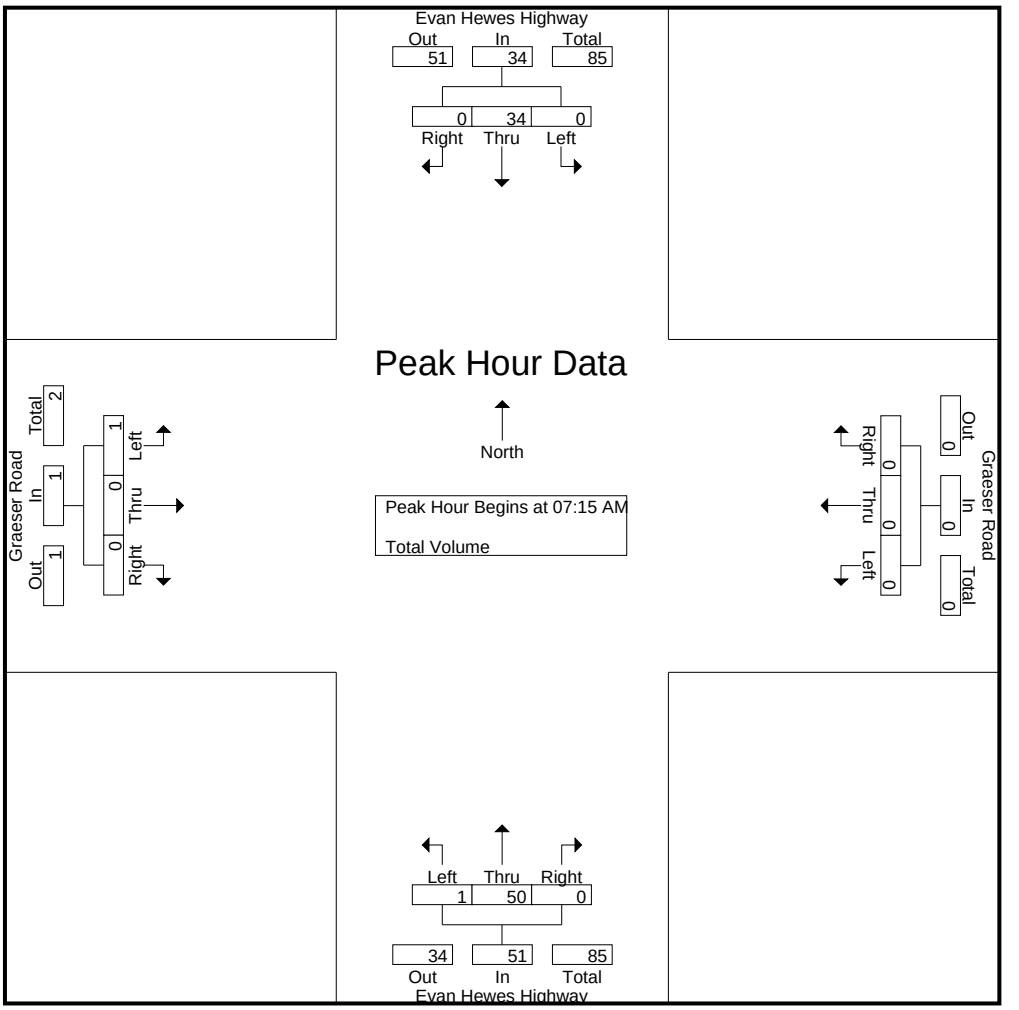
County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: Graeser Road
Weather: Clear

File Name : 06_CIM_Evan_Graeser AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:00 AM				07:45 AM			
+0 mins.	0	9	0	9	0	0	0	0	0	11	0	11	**1**	0	0	**1**
+15 mins.	0	9	0	9	0	0	0	0	0	13	0	13	0	0	0	0
+30 mins.	0	**10**	0	**10**	**1**	0	0	**1**	0	11	0	11	0	0	0	0
+45 mins.	**1**	9	0	10	1	0	0	1	**1**	**16**	0	**17**	0	0	**1**	1
Total Volume	1	37	0	38	2	0	0	2	1	51	0	52	1	0	1	2
% App. Total	2.6	97.4	0		100	0	0		1.9	98.1	0		50	0	50	
PHF	.250	.925	.000	.950	.500	.000	.000	.500	.250	.797	.000	.765	.250	.000	.250	.500

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County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: Graeser Road
Weather: Clear

File Name : 06_CIM_Evan_Graeser PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Evan Hewes Highway Southbound				Graeser Road Westbound				Evan Hewes Highway Northbound				Graeser Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	18	0	18	0	0	0	0	0	11	0	11	0	0	0	0	29
04:15 PM	0	12	0	12	0	0	0	0	0	9	0	9	0	0	0	0	21
04:30 PM	0	15	0	15	0	0	0	0	0	7	0	7	0	0	0	0	22
04:45 PM	0	15	1	16	0	0	0	0	0	7	0	7	0	0	1	1	24
Total	0	60	1	61	0	0	0	0	0	34	0	34	0	0	1	1	96
05:00 PM	0	9	0	9	0	0	0	0	0	12	0	12	0	0	0	0	21
05:15 PM	0	13	0	13	0	0	0	0	0	11	0	11	0	0	0	0	24
05:30 PM	0	12	0	12	0	0	0	0	0	6	0	6	0	0	0	0	18
05:45 PM	0	1	0	1	0	0	0	0	1	8	0	9	0	0	1	1	11
Total	0	35	0	35	0	0	0	0	1	37	0	38	0	0	1	1	74
Grand Total	0	95	1	96	0	0	0	0	1	71	0	72	0	0	2	2	170
Apprch %	0	99	1		0	0	0		1.4	98.6	0		0	0	100		
Total %	0	55.9	0.6	56.5	0	0	0	0	0.6	41.8	0	42.4	0	0	1.2	1.2	

	Evan Hewes Highway Southbound				Graeser Road Westbound				Evan Hewes Highway Northbound				Graeser Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**18**	0	**18**	0	0	0	0	0	**11**	0	**11**	0	0	0	0	**29**
04:15 PM	0	12	0	12	0	0	0	0	0	9	0	9	0	0	0	0	21
04:30 PM	0	15	0	15	0	0	0	0	0	7	0	7	0	0	0	0	22
04:45 PM	0	15	**1**	16	0	0	0	0	0	7	0	7	0	0	**1**	**1**	24
Total Volume	0	60	1	61	0	0	0	0	0	34	0	34	0	0	1	1	96
% App. Total	0	98.4	1.6		0	0	0		0	100	0		0	0	100		
PHF	.000	.833	.250	.847	.000	.000	.000	.000	.000	.773	.000	.773	.000	.000	.250	.250	.828

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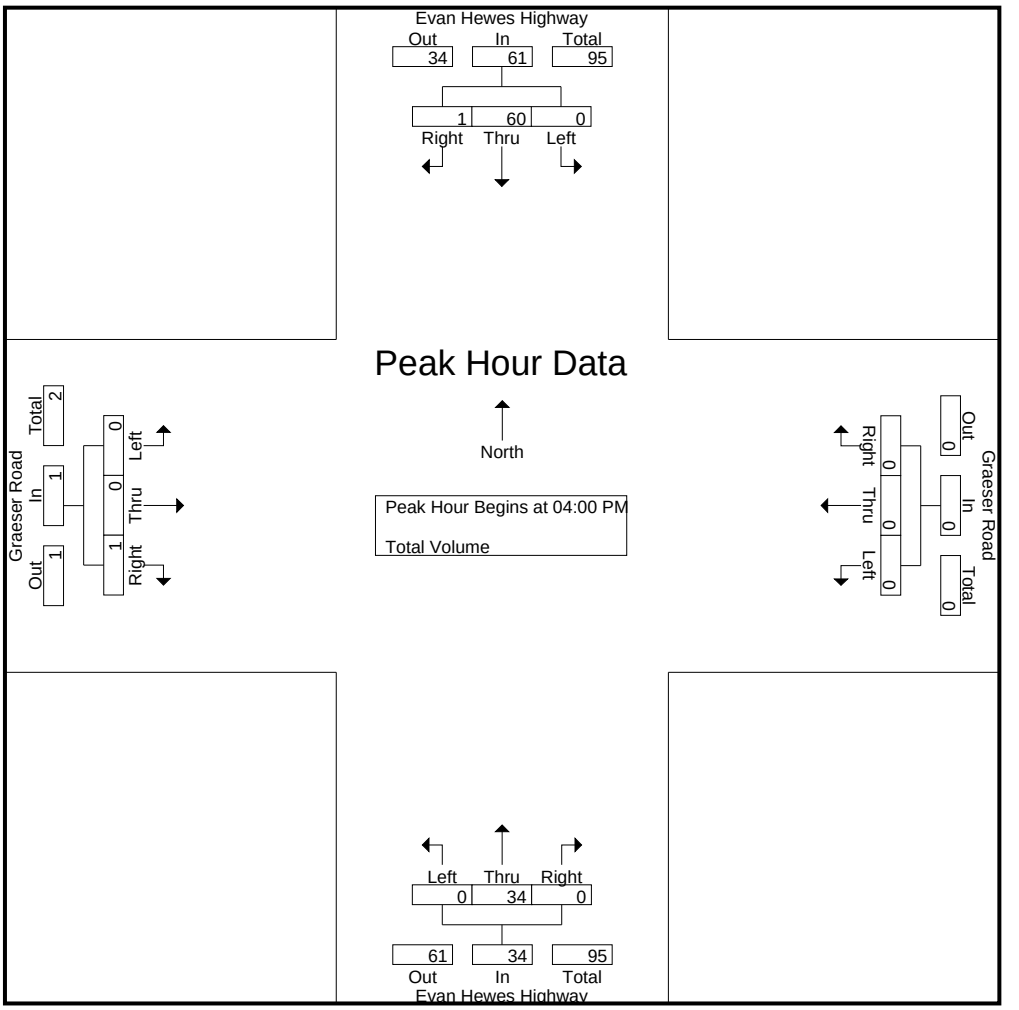
County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: Graeser Road
Weather: Clear

File Name : 06_CIM_Evan_Graeser PM
Site Code : 99920467
Start Date : 12/18/2020



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	0	**18**	0	**18**	0	0	0	0	0	**12**	0	**12**	0	0	0	0
+15 mins.	0	12	0	12	0	0	0	0	0	11	0	11	0	0	0	0
+30 mins.	0	15	0	15	0	0	0	0	0	6	0	6	0	0	0	0
+45 mins.	0	15	**1**	16	0	0	0	0	**1**	8	0	9	0	0	**1**	**1**
Total Volume	0	60	1	61	0	0	0	0	1	37	0	38	0	0	1	1
% App. Total	0	98.4	1.6		0	0	0		2.6	97.4	0		0	0	100	
PHF	.000	.833	.250	.847	.000	.000	.000	.000	.250	.771	.000	.792	.000	.000	.250	.250

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County of Imperial
N/S: Orchard Road (SR-7)
E/W: I-8 Westbound Ramps
Weather: Clear

File Name : 13_CIM_Orchard_8W AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Orchard Road Southbound				I-8 Westbound Ramps Westbound				Orchard Road Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	17	14	31	3	0	3	6	12	33	15	60	0	0	0	0	97
07:15 AM	0	18	14	32	1	0	1	2	3	28	33	64	0	0	0	0	98
07:30 AM	0	20	14	34	1	0	0	1	3	32	40	75	0	0	0	0	110
07:45 AM	0	16	13	29	1	0	0	1	4	28	27	59	0	0	0	0	89
Total	0	71	55	126	6	0	4	10	22	121	115	258	0	0	0	0	394
08:00 AM	0	14	7	21	1	0	1	2	6	26	26	58	0	0	0	0	81
08:15 AM	0	19	5	24	0	0	3	3	5	17	22	44	0	0	0	0	71
08:30 AM	0	14	6	20	0	0	1	1	9	21	24	54	0	0	0	0	75
08:45 AM	0	15	4	19	2	0	3	5	5	12	22	39	0	0	0	0	63
Total	0	62	22	84	3	0	8	11	25	76	94	195	0	0	0	0	290
Grand Total	0	133	77	210	9	0	12	21	47	197	209	453	0	0	0	0	684
Apprch %	0	63.3	36.7		42.9	0	57.1		10.4	43.5	46.1		0	0	0		
Total %	0	19.4	11.3	30.7	1.3	0	1.8	3.1	6.9	28.8	30.6	66.2	0	0	0	0	

	Orchard Road Southbound				I-8 Westbound Ramps Westbound				Orchard Road Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	17	**14**	31	**3**	0	**3**	**6**	**12**	**33**	15	60	0	0	0	0	97
07:15 AM	0	18	14	32	1	0	1	2	3	28	33	64	0	0	0	0	98
07:30 AM	0	**20**	14	**34**	1	0	0	1	3	32	**40**	**75**	0	0	0	0	**110**
07:45 AM	0	16	13	29	1	0	0	1	4	28	27	59	0	0	0	0	89
Total Volume	0	71	55	126	6	0	4	10	22	121	115	258	0	0	0	0	394
% App. Total	0	56.3	43.7		60	0	40		8.5	46.9	44.6		0	0	0		
PHF	.000	.888	.982	.926	.500	.000	.333	.417	.458	.917	.719	.860	.000	.000	.000	.000	.895

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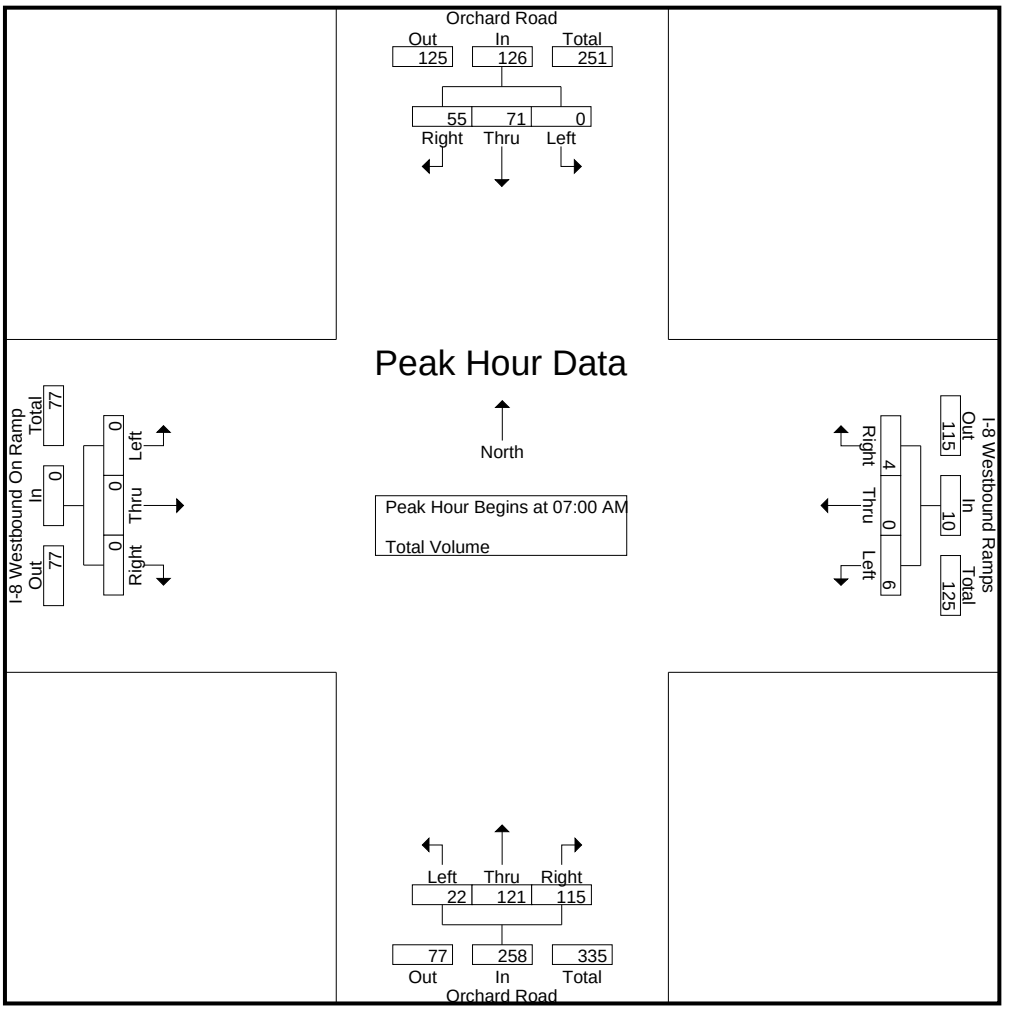
County of Imperial
N/S: Orchard Road (SR-7)
E/W: I-8 Westbound Ramps
Weather: Clear

File Name : 13_CIM_Orchard_8W AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				08:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	17	**14**	31	1	0	1	2	**12**	**33**	15	60	0	0	0	0
+15 mins.	0	18	14	32	0	0	**3**	3	3	28	33	64	0	0	0	0
+30 mins.	0	**20**	14	**34**	0	0	1	1	3	32	**40**	**75**	0	0	0	0
+45 mins.	0	16	13	29	**2**	0	3	**5**	4	28	27	59	0	0	0	0
Total Volume	0	71	55	126	3	0	8	11	22	121	115	258	0	0	0	0
% App. Total	0	56.3	43.7		27.3	0	72.7		8.5	46.9	44.6		0	0	0	
PHF	.000	.888	.982	.926	.375	.000	.667	.550	.458	.917	.719	.860	.000	.000	.000	.000

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County of Imperial
N/S: Orchard Road (SR-7)
E/W: I-8 Westbound Ramps
Weather: Clear

File Name : 13_CIM_Orchard_8W PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Orchard Road Southbound				I-8 Westbound Ramps Westbound				Orchard Road Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	35	14	49	4	0	2	6	8	24	20	52	0	0	0	0	107
04:15 PM	0	15	7	22	5	0	2	7	3	23	16	42	0	0	0	0	71
04:30 PM	0	14	12	26	4	0	0	4	4	32	13	49	0	0	0	0	79
04:45 PM	0	14	10	24	3	0	0	3	4	15	10	29	0	0	0	0	56
Total	0	78	43	121	16	0	4	20	19	94	59	172	0	0	0	0	313
05:00 PM	0	17	18	35	4	0	1	5	0	28	10	38	0	0	0	0	78
05:15 PM	0	11	10	21	3	0	1	4	2	31	14	47	0	0	0	0	72
05:30 PM	0	11	10	21	2	2	1	5	2	26	12	40	0	0	0	0	66
05:45 PM	0	14	7	21	7	0	2	9	1	27	16	44	0	0	0	0	74
Total	0	53	45	98	16	2	5	23	5	112	52	169	0	0	0	0	290
Grand Total	0	131	88	219	32	2	9	43	24	206	111	341	0	0	0	0	603
Apprch %	0	59.8	40.2		74.4	4.7	20.9		7	60.4	32.6		0	0	0		
Total %	0	21.7	14.6	36.3	5.3	0.3	1.5	7.1	4	34.2	18.4	56.6	0	0	0	0	

	Orchard Road Southbound				I-8 Westbound Ramps Westbound				Orchard Road Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**35**	**14**	**49**	4	0	**2**	6	**8**	24	**20**	**52**	0	0	0	0	**107**
04:15 PM	0	15	7	22	**5**	0	2	**7**	3	23	16	42	0	0	0	0	71
04:30 PM	0	14	12	26	4	0	0	4	4	**32**	13	49	0	0	0	0	79
04:45 PM	0	14	10	24	3	0	0	3	4	15	10	29	0	0	0	0	56
Total Volume	0	78	43	121	16	0	4	20	19	94	59	172	0	0	0	0	313
% App. Total	0	64.5	35.5		80	0	20		11	54.7	34.3		0	0	0		
PHF	.000	.557	.768	.617	.800	.000	.500	.714	.594	.734	.738	.827	.000	.000	.000	.000	.731

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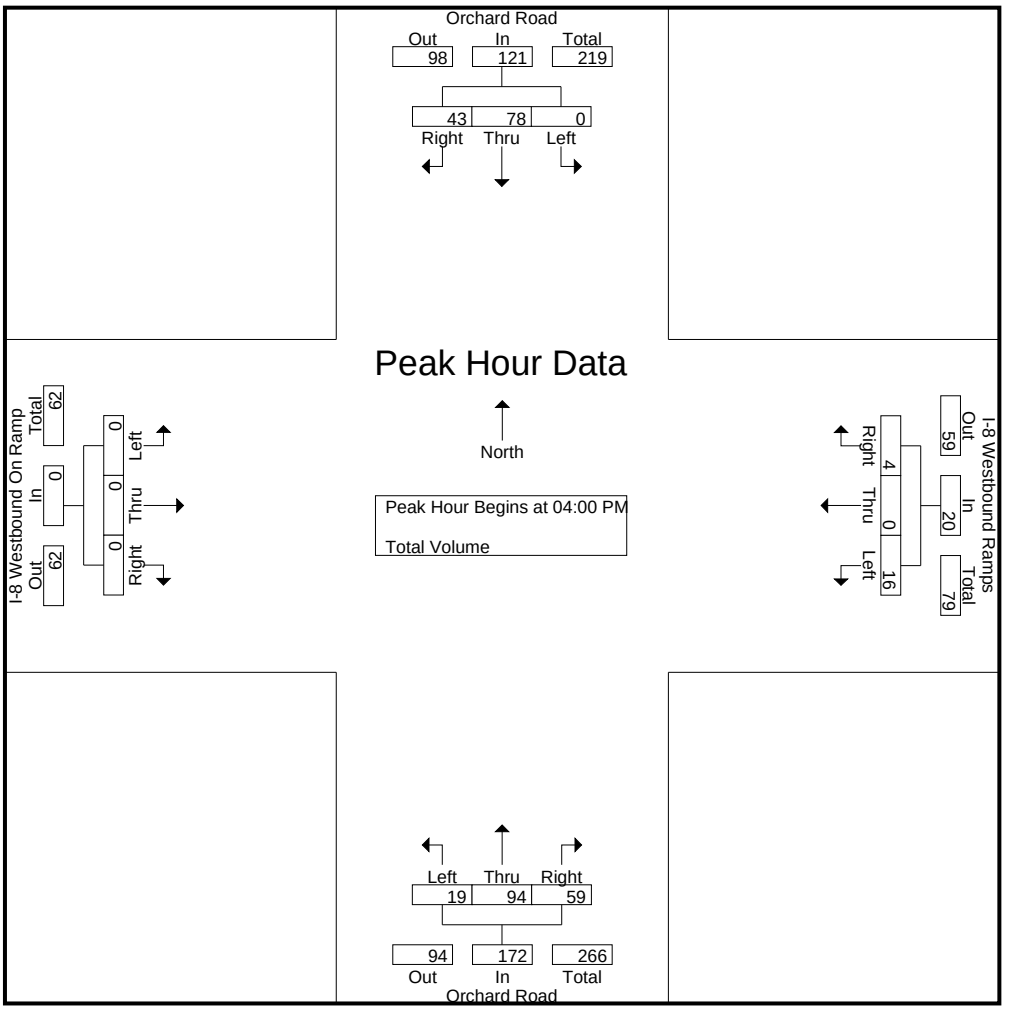
County of Imperial
N/S: Orchard Road (SR-7)
E/W: I-8 Westbound Ramps
Weather: Clear

File Name : 13_CIM_Orchard_8W PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	**35**	**14**	**49**	4	0	1	5	**8**	24	**20**	**52**	0	0	0	0
+15 mins.	0	15	7	22	3	0	1	4	3	23	16	42	0	0	0	0
+30 mins.	0	14	12	26	2	**2**	1	5	4	**32**	13	49	0	0	0	0
+45 mins.	0	14	10	24	**7**	0	**2**	**9**	4	15	10	29	0	0	0	0
Total Volume	0	78	43	121	16	2	5	23	19	94	59	172	0	0	0	0
% App. Total	0	64.5	35.5		69.6	8.7	21.7		11	54.7	34.3		0	0	0	
PHF	.000	.557	.768	.617	.571	.250	.625	.639	.594	.734	.738	.827	.000	.000	.000	.000

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County of Imperial
N/S: Orchard Road (SR-7)
E/W: I-8 Eastbound Ramps
Weather: Clear

File Name : 14_CIM_Orchard_8E AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Orchard Road Southbound				I-8 Eastbound On Ramp Westbound				Orchard Road Northbound				I-8 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	12	0	12	0	0	0	0	0	58	4	62	2	1	20	23	97
07:15 AM	0	10	0	10	0	0	0	0	0	62	1	63	4	0	37	41	114
07:30 AM	0	19	1	20	0	0	0	0	0	58	0	58	14	0	21	35	113
07:45 AM	1	20	2	23	0	0	0	0	0	47	2	49	10	0	38	48	120
Total	1	61	3	65	0	0	0	0	0	225	7	232	30	1	116	147	444
08:00 AM	1	14	2	17	0	0	0	0	0	50	1	51	10	0	32	42	110
08:15 AM	0	18	0	18	0	0	0	0	0	39	2	41	5	0	30	35	94
08:30 AM	0	13	1	14	0	0	0	0	0	48	0	48	5	0	36	41	103
08:45 AM	0	15	2	17	0	0	0	0	0	34	1	35	5	1	19	25	77
Total	1	60	5	66	0	0	0	0	0	171	4	175	25	1	117	143	384
Grand Total	2	121	8	131	0	0	0	0	0	396	11	407	55	2	233	290	828
Apprch %	1.5	92.4	6.1		0	0	0		0	97.3	2.7		19	0.7	80.3		
Total %	0.2	14.6	1	15.8	0	0	0	0	0	47.8	1.3	49.2	6.6	0.2	28.1	35	

	Orchard Road Southbound				I-8 Eastbound On Ramp Westbound				Orchard Road Northbound				I-8 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	10	0	10	0	0	0	0	0	**62**	1	**63**	4	0	37	41	114
07:30 AM	0	19	1	20	0	0	0	0	0	58	0	58	**14**	0	21	35	113
07:45 AM	**1**	**20**	**2**	**23**	0	0	0	0	0	47	**2**	49	10	0	**38**	**48**	**120**
08:00 AM	1	14	2	17	0	0	0	0	0	50	1	51	10	0	32	42	110
Total Volume	2	63	5	70	0	0	0	0	0	217	4	221	38	0	128	166	457
% App. Total	2.9	90	7.1		0	0	0		0	98.2	1.8		22.9	0	77.1		
PHF	.500	.788	.625	.761	.000	.000	.000	.000	.000	.875	.500	.877	.679	.000	.842	.865	.952

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County of Imperial
N/S: Orchard Road (SR-7)
E/W: I-8 Eastbound Ramps
Weather: Clear

File Name : 14_CIM_Orchard_8E AM
Site Code : 99920467
Start Date : 12/18/2020
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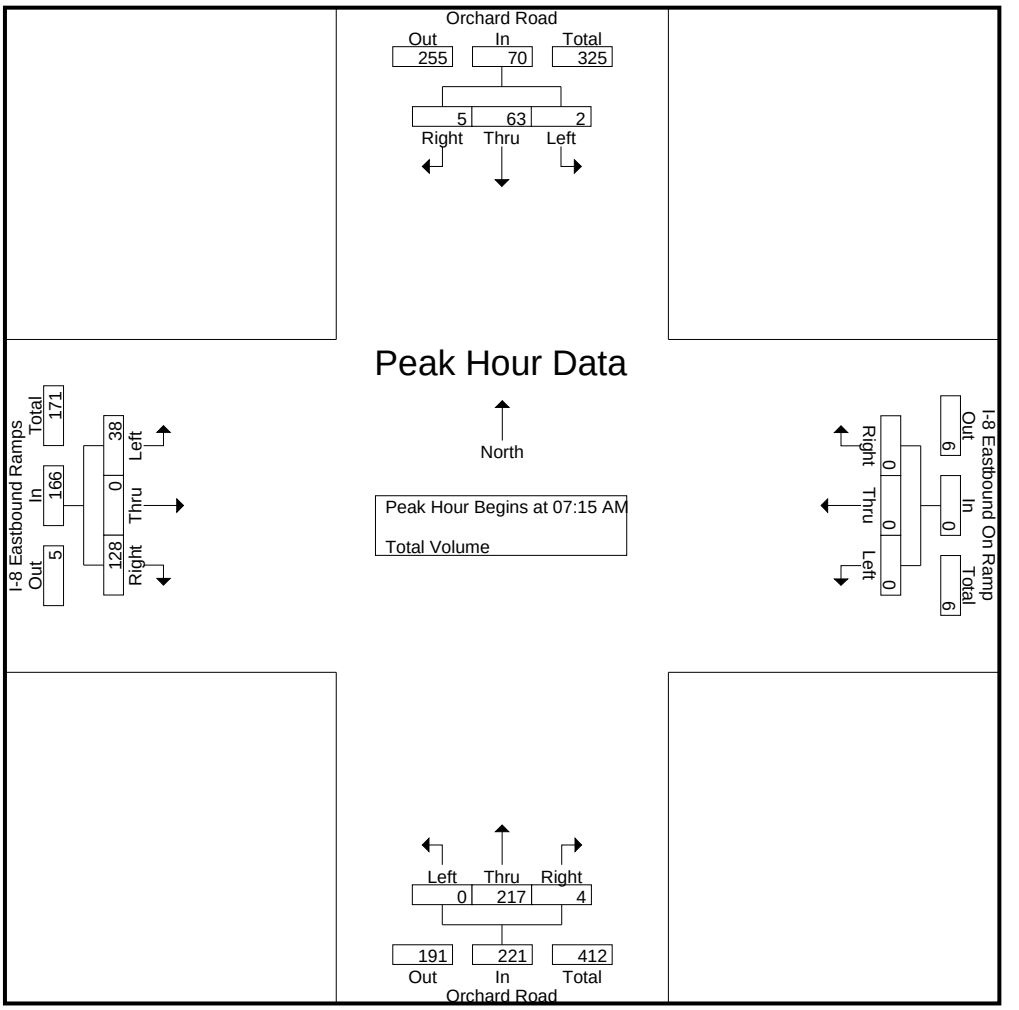

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	0	19	1	20	0	0	0	0	0	58	**4**	62	4	0	37	41
+15 mins.	**1**	**20**	**2**	**23**	0	0	0	0	0	**62**	1	**63**	**14**	0	21	35
+30 mins.	1	14	2	17	0	0	0	0	0	58	0	58	10	0	**38**	**48**
+45 mins.	0	18	0	18	0	0	0	0	0	47	2	49	10	0	32	42
Total Volume	2	71	5	78	0	0	0	0	0	225	7	232	38	0	128	166
% App. Total	2.6	91	6.4		0	0	0		0	97	3		22.9	0	77.1	
PHF	.500	.888	.625	.848	.000	.000	.000	.000	.000	.907	.438	.921	.679	.000	.842	.865

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County of Imperial
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Weather: Clear

File Name : 14_CIM_Orchard_8E PM
Site Code : 99920467
Start Date : 12/18/2020
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Groups Printed- Total Volume

	Orchard Road Southbound				I-8 Eastbound On Ramp Westbound				Orchard Road Northbound				I-8 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	32	5	37	0	0	0	0	0	37	0	37	14	1	14	29	103
04:15 PM	0	23	0	23	0	0	0	0	0	26	2	28	17	0	19	36	87
04:30 PM	0	18	1	19	0	0	0	0	0	28	1	29	21	0	7	28	76
04:45 PM	0	18	0	18	0	0	0	0	0	18	3	21	13	0	19	32	71
Total	0	91	6	97	0	0	0	0	0	109	6	115	65	1	59	125	337
05:00 PM	0	15	2	17	0	0	0	0	0	24	4	28	13	0	15	28	73
05:15 PM	0	14	2	16	0	0	0	0	0	33	1	34	19	0	16	35	85
05:30 PM	0	10	1	11	0	0	0	0	0	21	1	22	15	1	14	30	63
05:45 PM	0	22	0	22	0	0	0	0	0	26	2	28	18	0	14	32	82
Total	0	61	5	66	0	0	0	0	0	104	8	112	65	1	59	125	303
Grand Total	0	152	11	163	0	0	0	0	0	213	14	227	130	2	118	250	640
Apprch %	0	93.3	6.7		0	0	0		0	93.8	6.2		52	0.8	47.2		
Total %	0	23.8	1.7	25.5	0	0	0	0	0	33.3	2.2	35.5	20.3	0.3	18.4	39.1	

	Orchard Road Southbound				I-8 Eastbound On Ramp Westbound				Orchard Road Northbound				I-8 Eastbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**32**	**5**	**37**	0	0	0	0	0	**37**	0	**37**	14	**1**	14	29	**103**
04:15 PM	0	23	0	23	0	0	0	0	0	26	2	28	17	0	**19**	**36**	87
04:30 PM	0	18	1	19	0	0	0	0	0	28	1	29	**21**	0	7	28	76
04:45 PM	0	18	0	18	0	0	0	0	0	18	**3**	21	13	0	19	32	71
Total Volume	0	91	6	97	0	0	0	0	0	109	6	115	65	1	59	125	337
% App. Total	0	93.8	6.2		0	0	0		0	94.8	5.2		52	0.8	47.2		
PHF	.000	.711	.300	.655	.000	.000	.000	.000	.000	.736	.500	.777	.774	.250	.776	.868	.818

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County of Imperial
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Weather: Clear

File Name : 14_CIM_Orchard_8E PM
Site Code : 99920467
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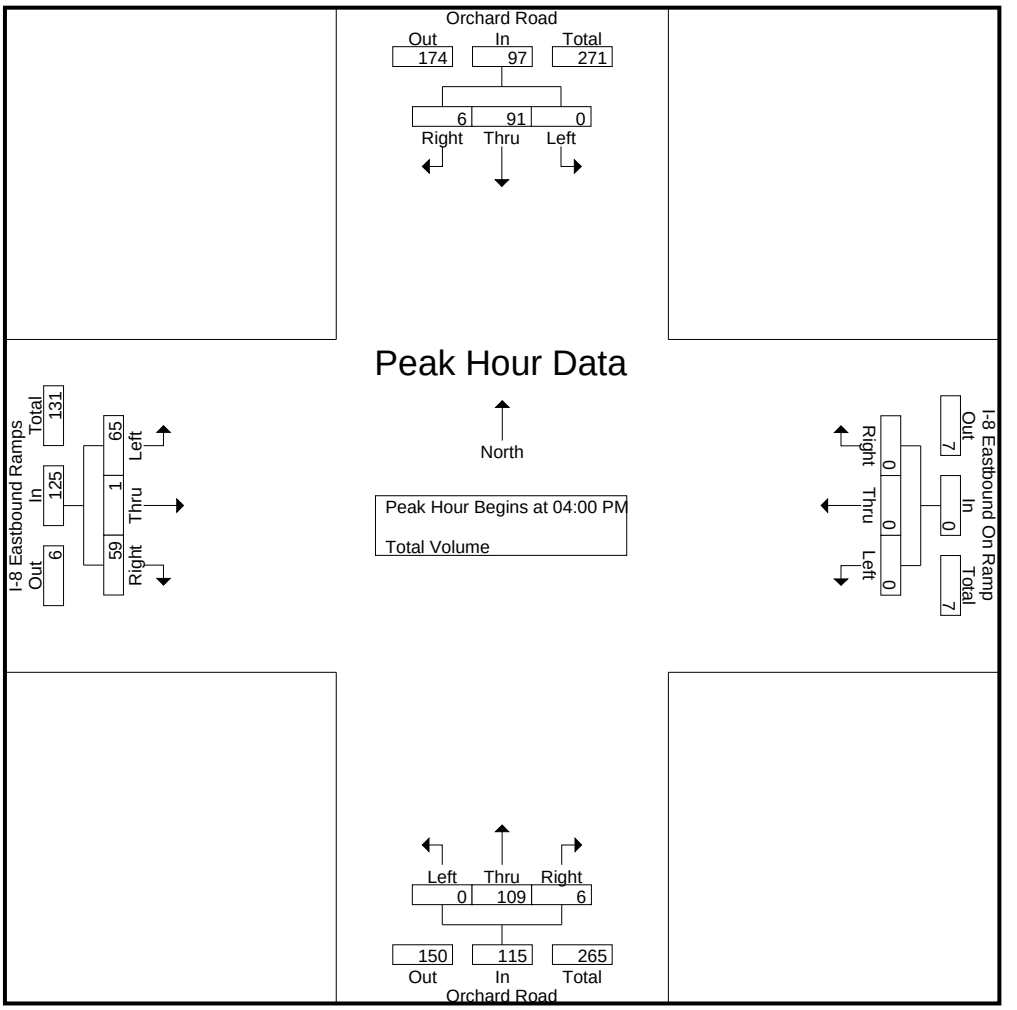

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	**32**	**5**	**37**	0	0	0	0	0	**37**	0	**37**	14	**1**	14	29
+15 mins.	0	23	0	23	0	0	0	0	0	26	2	28	17	0	**19**	**36**
+30 mins.	0	18	1	19	0	0	0	0	0	28	1	29	**21**	0	7	28
+45 mins.	0	18	0	18	0	0	0	0	0	18	**3**	21	13	0	19	32
Total Volume	0	91	6	97	0	0	0	0	0	109	6	115	65	1	59	125
% App. Total	0	93.8	6.2		0	0	0		0	94.8	5.2		52	0.8	47.2	
PHF	.000	.711	.300	.655	.000	.000	.000	.000	.000	.736	.500	.777	.774	.250	.776	.868

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County of Imperial
N/S: Bonds Corner Road
E/W: I-8 Westbound Ramps
Weather: Clear

File Name : 01_CIM_Bonds_8W AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Bonds Corner Road Southbound				I-8 Westbound Off Ramp Westbound				Bonds Corner Road Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	9	0	9	2	0	2	4	0	12	0	12	0	0	0	0	25
07:15 AM	0	4	1	5	0	0	1	1	0	5	0	5	0	0	0	0	11
07:30 AM	0	7	0	7	0	0	0	0	1	9	0	10	0	0	0	0	17
07:45 AM	0	6	0	6	0	0	0	0	2	6	0	8	0	0	0	0	14
Total	0	26	1	27	2	0	3	5	3	32	0	35	0	0	0	0	67
08:00 AM	0	7	0	7	1	0	1	2	1	5	0	6	0	0	0	0	15
08:15 AM	0	6	0	6	2	0	0	2	1	5	0	6	0	0	0	0	14
08:30 AM	0	5	1	6	0	1	1	2	5	10	0	15	0	0	0	0	23
08:45 AM	0	12	0	12	0	0	1	1	1	9	0	10	0	0	0	0	23
Total	0	30	1	31	3	1	3	7	8	29	0	37	0	0	0	0	75
Grand Total	0	56	2	58	5	1	6	12	11	61	0	72	0	0	0	0	142
Apprch %	0	96.6	3.4		41.7	8.3	50		15.3	84.7	0		0	0	0		
Total %	0	39.4	1.4	40.8	3.5	0.7	4.2	8.5	7.7	43	0	50.7	0	0	0	0	

	Bonds Corner Road Southbound				I-8 Westbound Off Ramp Westbound				Bonds Corner Road Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	7	0	7	1	0	**1**	**2**	1	5	0	6	0	0	0	0	15
08:15 AM	0	6	0	6	**2**	0	0	2	1	5	0	6	0	0	0	0	14
08:30 AM	0	5	**1**	6	0	**1**	1	2	**5**	**10**	0	**15**	0	0	0	0	**23**
08:45 AM	0	**12**	0	**12**	0	0	1	1	1	9	0	10	0	0	0	0	23
Total Volume	0	30	1	31	3	1	3	7	8	29	0	37	0	0	0	0	75
% App. Total	0	96.8	3.2		42.9	14.3	42.9		21.6	78.4	0		0	0	0		
PHF	.000	.625	.250	.646	.375	.250	.750	.875	.400	.725	.000	.617	.000	.000	.000	.000	.815

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County of Imperial
N/S: Bonds Corner Road
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File Name : 01_CIM_Bonds_8W AM
Site Code : 99920467
Start Date : 12/18/2020
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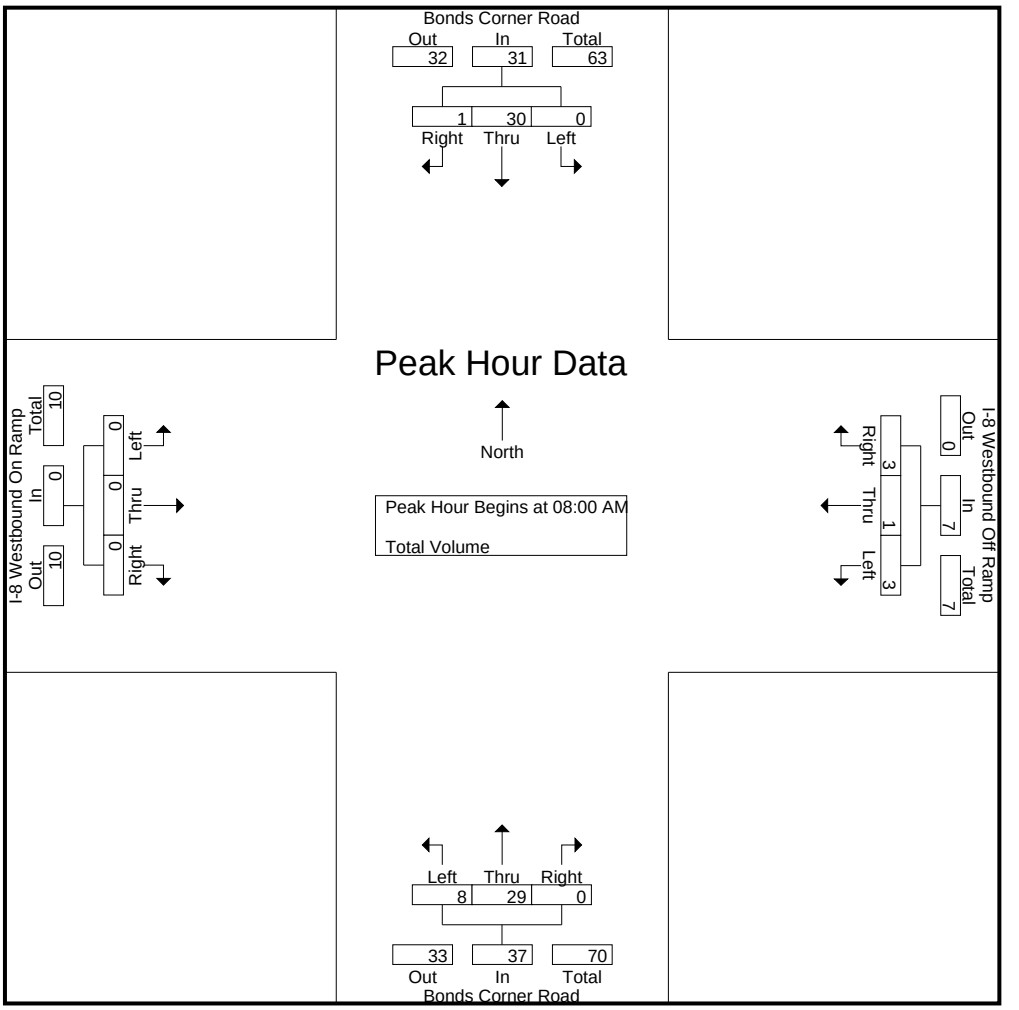

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				08:00 AM				07:00 AM			
+0 mins.	0	7	0	7	1	0	**1**	**2**	1	5	0	6	0	0	0	0
+15 mins.	0	6	0	6	**2**	0	0	2	1	5	0	6	0	0	0	0
+30 mins.	0	5	**1**	6	0	**1**	1	2	**5**	**10**	0	**15**	0	0	0	0
+45 mins.	0	**12**	0	**12**	0	0	1	1	1	9	0	10	0	0	0	0
Total Volume	0	30	1	31	3	1	3	7	8	29	0	37	0	0	0	0
% App. Total	0	96.8	3.2		42.9	14.3	42.9		21.6	78.4	0		0	0	0	
PHF	.000	.625	.250	.646	.375	.250	.750	.875	.400	.725	.000	.617	.000	.000	.000	.000

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County of Imperial
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Weather: Clear

File Name : 01_CIM_Bonds_8W PM
Site Code : 99920467
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Groups Printed- Total Volume

	Bonds Corner Road Southbound				I-8 Westbound Off Ramp Westbound				Bonds Corner Road Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	2	1	3	1	0	1	2	2	10	0	12	0	0	0	0	17
04:15 PM	0	5	1	6	0	0	0	0	7	7	0	14	0	0	0	0	20
04:30 PM	0	5	2	7	0	0	3	3	9	4	0	13	0	0	0	0	23
04:45 PM	0	4	0	4	0	0	1	1	1	6	0	7	0	0	0	0	12
Total	0	16	4	20	1	0	5	6	19	27	0	46	0	0	0	0	72
05:00 PM	0	4	3	7	1	0	1	2	0	4	0	4	0	0	0	0	13
05:15 PM	0	3	0	3	0	0	0	0	5	8	0	13	0	0	0	0	16
05:30 PM	0	4	0	4	0	0	1	1	2	3	0	5	0	0	0	0	10
05:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
Total	0	11	3	14	1	0	2	3	7	17	0	24	0	0	0	0	41
Grand Total	0	27	7	34	2	0	7	9	26	44	0	70	0	0	0	0	113
Apprch %	0	79.4	20.6		22.2	0	77.8		37.1	62.9	0		0	0	0		
Total %	0	23.9	6.2	30.1	1.8	0	6.2	8	23	38.9	0	61.9	0	0	0	0	

	Bonds Corner Road Southbound				I-8 Westbound Off Ramp Westbound				Bonds Corner Road Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	2	1	3	**1**	0	1	2	2	**10**	0	12	0	0	0	0	17
04:15 PM	0	**5**	1	6	0	0	0	0	7	7	0	**14**	0	0	0	0	20
04:30 PM	0	5	**2**	**7**	0	0	**3**	**3**	**9**	4	0	13	0	0	0	0	**23**
04:45 PM	0	4	0	4	0	0	1	1	1	6	0	7	0	0	0	0	12
Total Volume	0	16	4	20	1	0	5	6	19	27	0	46	0	0	0	0	72
% App. Total	0	80	20		16.7	0	83.3		41.3	58.7	0		0	0	0		
PHF	.000	.800	.500	.714	.250	.000	.417	.500	.528	.675	.000	.821	.000	.000	.000	.000	.783

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File Name : 01_CIM_Bonds_8W PM
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Start Date : 12/18/2020
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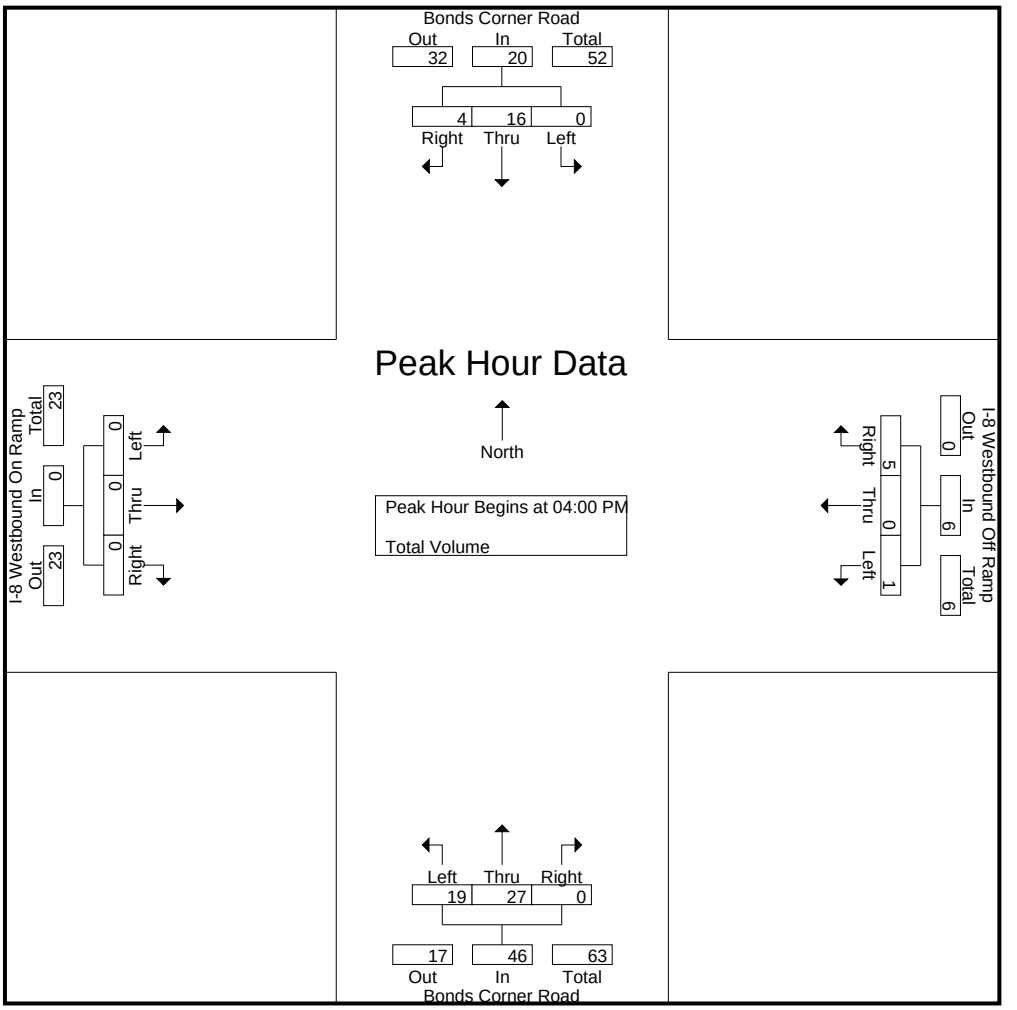

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	**5**	1	6	**1**	0	1	2	2	**10**	0	12	0	0	0	0
+15 mins.	0	5	2	**7**	0	0	0	0	7	7	0	**14**	0	0	0	0
+30 mins.	0	4	0	4	0	0	**3**	**3**	**9**	4	0	13	0	0	0	0
+45 mins.	0	4	**3**	7	0	0	1	1	1	6	0	7	0	0	0	0
Total Volume	0	18	6	24	1	0	5	6	19	27	0	46	0	0	0	0
% App. Total	0	75	25		16.7	0	83.3		41.3	58.7	0		0	0	0	
PHF	.000	.900	.500	.857	.250	.000	.417	.500	.528	.675	.000	.821	.000	.000	.000	.000

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PO Box 1178
Corona, CA 92878
(951)268-6268

County of Imperial
N/S: Bonds Corner Road
E/W: I-8 Eastbound Ramps
Weather: Clear

File Name : 02_CIM_Bonds_8E AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Bonds Corner Road Southbound				I-8 Eastbound On Ramp Westbound				Bonds Corner Road Northbound				I-8 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	12	0	12	0	0	0	0	0	12	0	12	0	1	2	3	27
07:15 AM	0	5	0	5	0	0	0	0	0	3	0	3	0	0	5	5	13
07:30 AM	0	5	0	5	0	0	0	0	0	4	0	4	3	0	3	6	15
07:45 AM	0	5	0	5	0	0	0	0	0	4	0	4	4	1	6	11	20
Total	0	27	0	27	0	0	0	0	0	23	0	23	7	2	16	25	75
08:00 AM	0	7	0	7	0	0	0	0	0	6	0	6	1	0	2	3	16
08:15 AM	1	6	0	7	0	0	0	0	0	5	0	5	2	0	6	8	20
08:30 AM	0	7	0	7	0	0	0	0	0	14	2	16	1	0	4	5	28
08:45 AM	1	10	0	11	0	0	0	0	0	10	0	10	0	0	2	2	23
Total	2	30	0	32	0	0	0	0	0	35	2	37	4	0	14	18	87
Grand Total	2	57	0	59	0	0	0	0	0	58	2	60	11	2	30	43	162
Apprch %	3.4	96.6	0		0	0	0		0	96.7	3.3		25.6	4.7	69.8		
Total %	1.2	35.2	0	36.4	0	0	0	0	0	35.8	1.2	37	6.8	1.2	18.5	26.5	

	Bonds Corner Road Southbound				I-8 Eastbound On Ramp Westbound				Bonds Corner Road Northbound				I-8 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	7	0	7	0	0	0	0	0	6	0	6	1	0	2	3	16
08:15 AM	**1**	6	0	7	0	0	0	0	0	5	0	5	**2**	0	**6**	**8**	20
08:30 AM	0	7	0	7	0	0	0	0	0	**14**	**2**	**16**	1	0	4	5	**28**
08:45 AM	1	**10**	0	**11**	0	0	0	0	0	10	0	10	0	0	2	2	23
Total Volume	2	30	0	32	0	0	0	0	0	35	2	37	4	0	14	18	87
% App. Total	6.2	93.8	0		0	0	0		0	94.6	5.4		22.2	0	77.8		
PHF	.500	.750	.000	.727	.000	.000	.000	.000	.000	.625	.250	.578	.500	.000	.583	.563	.777

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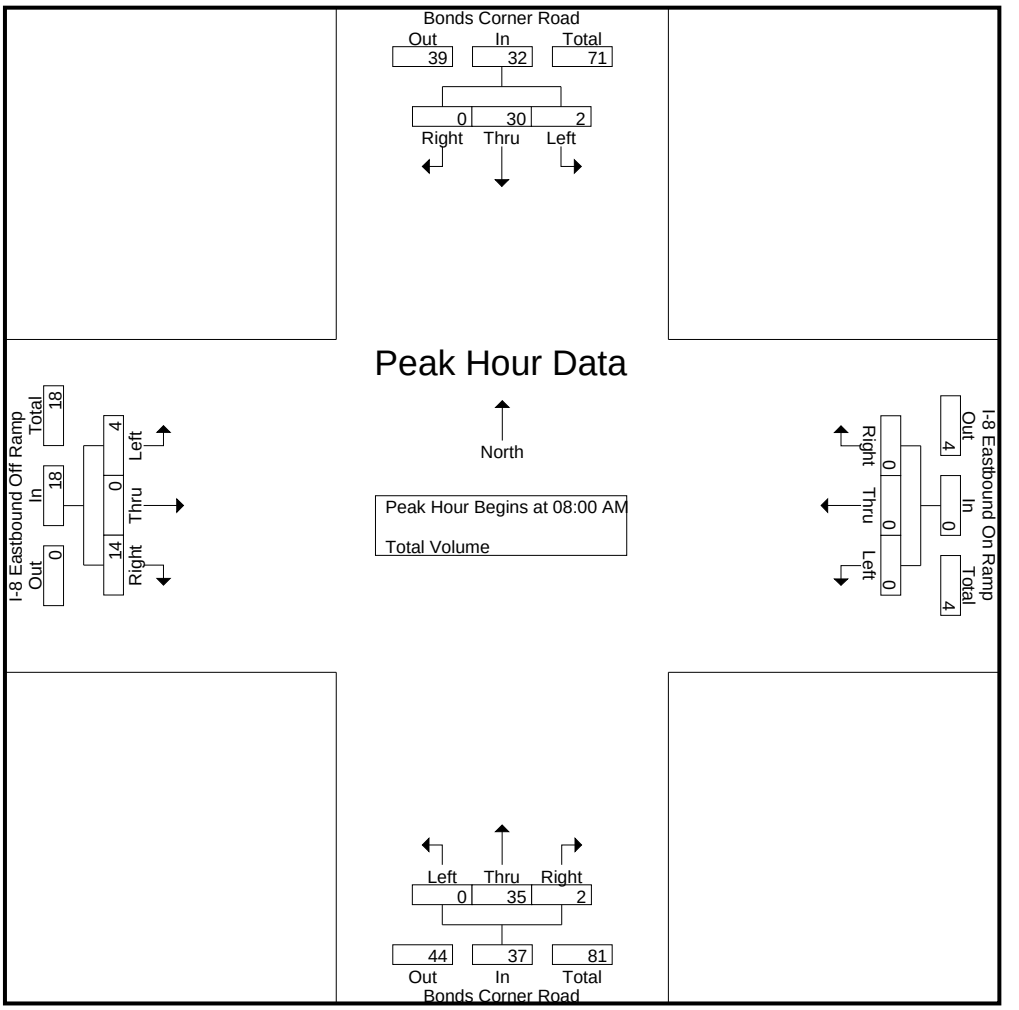
County of Imperial
N/S: Bonds Corner Road
E/W: I-8 Eastbound Ramps
Weather: Clear

File Name : 02_CIM_Bonds_8E AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				08:00 AM				07:30 AM			
+0 mins.	0	7	0	7	0	0	0	0	0	6	0	6	3	0	3	6
+15 mins.	**1**	6	0	7	0	0	0	0	0	5	0	5	**4**	**1**	**6**	**11**
+30 mins.	0	7	0	7	0	0	0	0	0	**14**	**2**	**16**	1	0	2	3
+45 mins.	1	**10**	0	**11**	0	0	0	0	0	10	0	10	2	0	6	8
Total Volume	2	30	0	32	0	0	0	0	0	35	2	37	10	1	17	28
% App. Total	6.2	93.8	0		0	0	0		0	94.6	5.4		35.7	3.6	60.7	
PHF	.500	.750	.000	.727	.000	.000	.000	.000	.000	.625	.250	.578	.625	.250	.708	.636

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County of Imperial
N/S: Bonds Corner Road
E/W: I-8 Eastbound Ramps
Weather: Clear

File Name : 02_CIM_Bonds_8E PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Bonds Corner Road Southbound				I-8 Eastbound On Ramp Westbound				Bonds Corner Road Northbound				I-8 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	2	0	2	0	0	0	0	0	12	2	14	1	0	1	2	18
04:15 PM	0	4	0	4	0	0	0	0	0	13	0	13	0	1	0	1	18
04:30 PM	0	4	0	4	0	0	0	0	0	8	0	8	1	0	0	1	13
04:45 PM	0	5	0	5	0	0	0	0	0	8	2	10	2	0	1	3	18
Total	0	15	0	15	0	0	0	0	0	41	4	45	4	1	2	7	67
05:00 PM	1	4	0	5	0	0	0	0	0	2	1	3	1	1	1	3	11
05:15 PM	0	3	0	3	0	0	0	0	0	12	1	13	1	0	1	2	18
05:30 PM	0	4	0	4	0	0	0	0	0	7	1	8	0	0	0	0	12
05:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	1	3	4
Total	1	11	0	12	0	0	0	0	0	22	3	25	2	3	3	8	45
Grand Total	1	26	0	27	0	0	0	0	0	63	7	70	6	4	5	15	112
Apprch %	3.7	96.3	0		0	0	0		0	90	10		40	26.7	33.3		
Total %	0.9	23.2	0	24.1	0	0	0	0	0	56.2	6.2	62.5	5.4	3.6	4.5	13.4	

	Bonds Corner Road Southbound				I-8 Eastbound On Ramp Westbound				Bonds Corner Road Northbound				I-8 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	2	0	2	0	0	0	0	0	12	**2**	**14**	1	0	**1**	2	**18**
04:15 PM	0	4	0	4	0	0	0	0	0	**13**	0	13	0	**1**	0	1	18
04:30 PM	0	4	0	4	0	0	0	0	0	8	0	8	1	0	0	1	13
04:45 PM	0	**5**	0	**5**	0	0	0	0	0	8	2	10	**2**	0	1	**3**	18
Total Volume	0	15	0	15	0	0	0	0	0	41	4	45	4	1	2	7	67
% App. Total	0	100	0		0	0	0		0	91.1	8.9		57.1	14.3	28.6		
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.000	.788	.500	.804	.500	.250	.500	.583	.931

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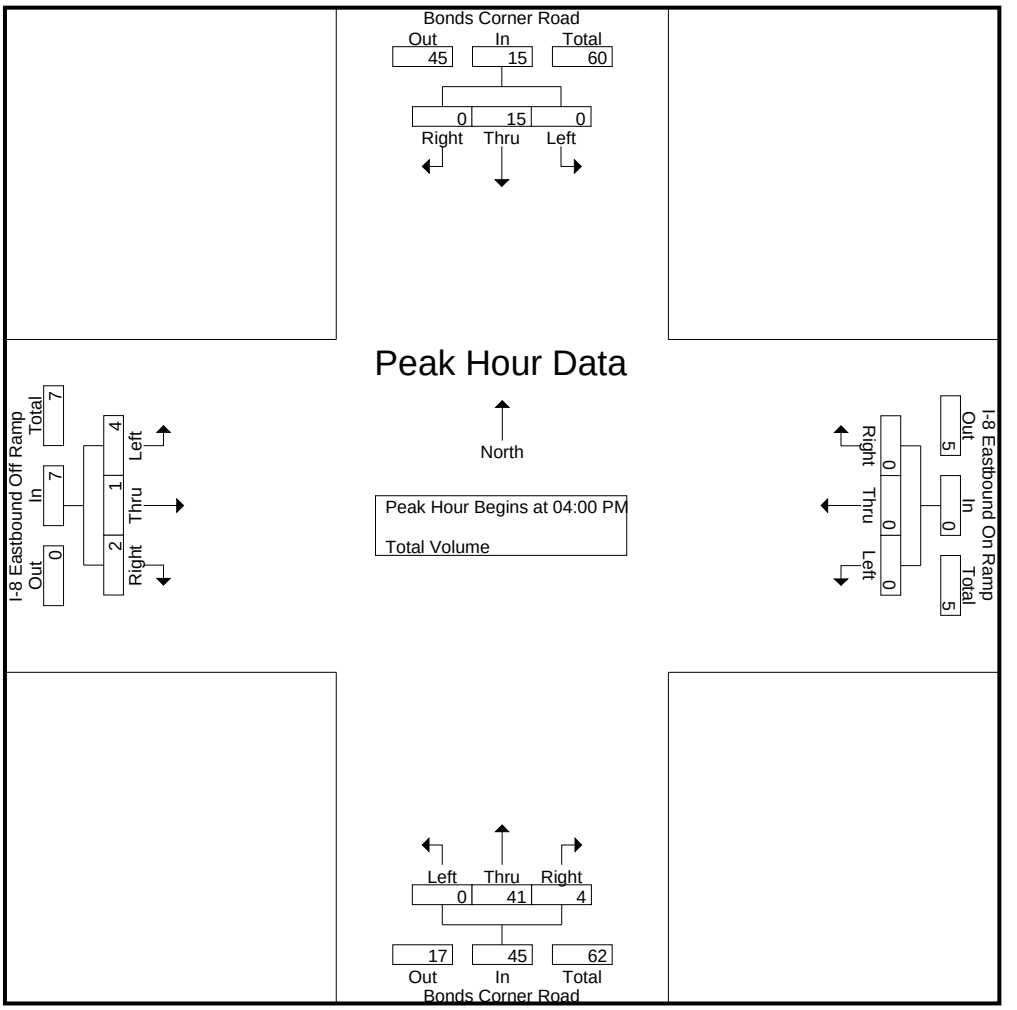
County of Imperial
N/S: Bonds Corner Road
E/W: I-8 Eastbound Ramps
Weather: Clear

File Name : 02_CIM_Bonds_8E PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:00 PM				04:00 PM				04:30 PM			
+0 mins.	0	4	0	4	0	0	0	0	0	12	**2**	**14**	1	0	0	1
+15 mins.	0	4	0	4	0	0	0	0	0	**13**	0	13	**2**	0	**1**	**3**
+30 mins.	0	**5**	0	**5**	0	0	0	0	0	8	0	8	1	**1**	1	3
+45 mins.	**1**	4	0	5	0	0	0	0	0	8	2	10	1	0	1	2
Total Volume	1	17	0	18	0	0	0	0	0	41	4	45	5	1	3	9
% App. Total	5.6	94.4	0		0	0	0		0	91.1	8.9		55.6	11.1	33.3	
PHF	.250	.850	.000	.900	.000	.000	.000	.000	.000	.788	.500	.804	.625	.250	.750	.750

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County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: I-8 Westbound Ramps
Weather: Clear

File Name : 09_CIM_Evan_8W AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Evan Hewes Highway Southbound				I-8 Westbound Off Ramp Westbound				Evan Hewes Highway Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	4	3	7	0	0	15	15	1	2	0	3	0	0	0	0	25
07:15 AM	0	8	0	8	0	0	8	8	0	0	0	0	0	0	0	0	16
07:30 AM	0	7	2	9	0	0	8	8	0	0	0	0	0	0	0	0	17
07:45 AM	0	8	0	8	0	0	15	15	0	3	0	3	0	0	0	0	26
Total	0	27	5	32	0	0	46	46	1	5	0	6	0	0	0	0	84
08:00 AM	0	7	1	8	1	0	2	3	0	3	1	4	0	0	0	0	15
08:15 AM	0	8	0	8	3	0	7	10	2	2	0	4	0	0	0	0	22
08:30 AM	0	6	0	6	0	0	10	10	0	2	0	2	0	0	0	0	18
08:45 AM	0	7	0	7	0	0	4	4	0	3	0	3	0	0	0	0	14
Total	0	28	1	29	4	0	23	27	2	10	1	13	0	0	0	0	69
Grand Total	0	55	6	61	4	0	69	73	3	15	1	19	0	0	0	0	153
Apprch %	0	90.2	9.8		5.5	0	94.5		15.8	78.9	5.3		0	0	0		
Total %	0	35.9	3.9	39.9	2.6	0	45.1	47.7	2	9.8	0.7	12.4	0	0	0	0	

	Evan Hewes Highway Southbound				I-8 Westbound Off Ramp Westbound				Evan Hewes Highway Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	4	**3**	7	0	0	**15**	**15**	**1**	2	0	**3**	0	0	0	0	25
07:15 AM	0	**8**	0	8	0	0	8	8	0	0	0	0	0	0	0	0	16
07:30 AM	0	7	2	**9**	0	0	8	8	0	0	0	0	0	0	0	0	17
07:45 AM	0	8	0	8	0	0	15	15	0	**3**	0	3	0	0	0	0	**26**
Total Volume	0	27	5	32	0	0	46	46	1	5	0	6	0	0	0	0	84
% App. Total	0	84.4	15.6		0	0	100		16.7	83.3	0		0	0	0		
PHF	.000	.844	.417	.889	.000	.000	.767	.767	.250	.417	.000	.500	.000	.000	.000	.000	.808

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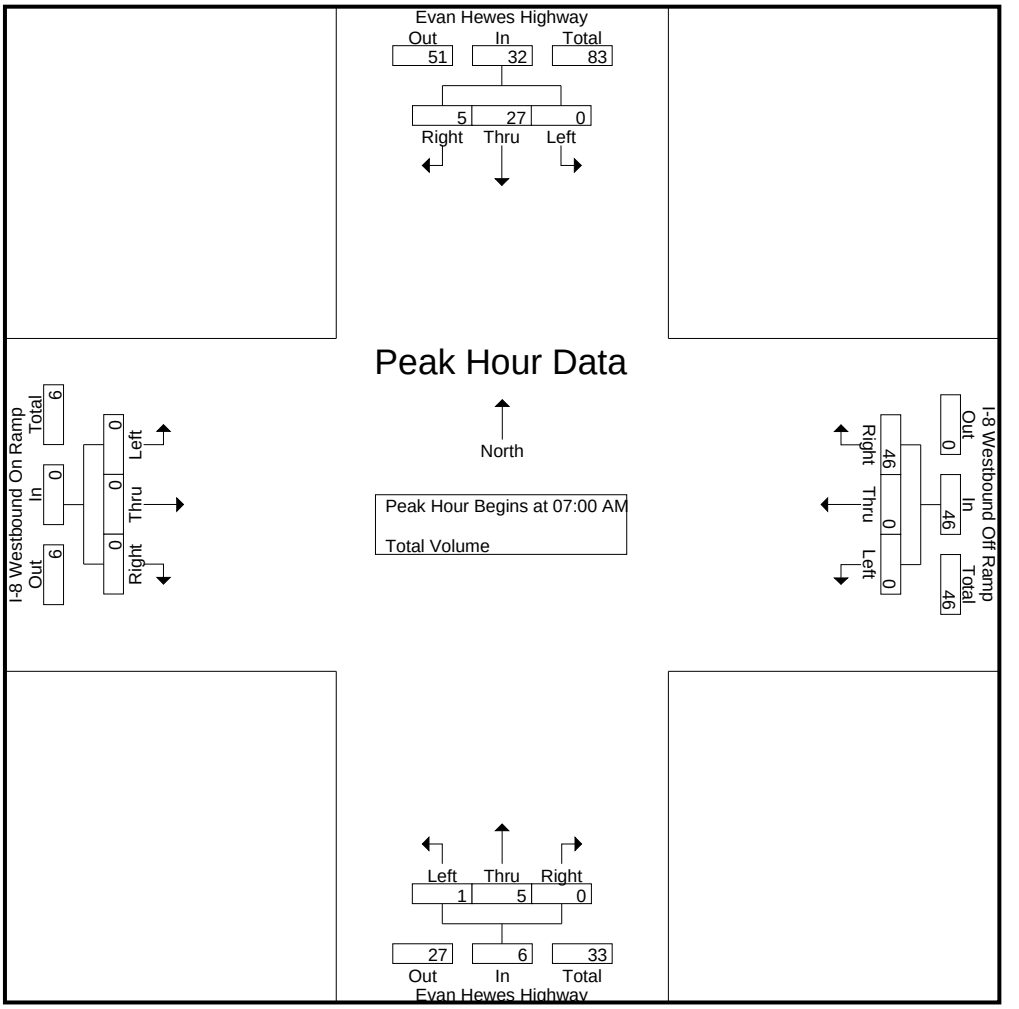
County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: I-8 Westbound Ramps
Weather: Clear

File Name : 09_CIM_Evan_8W AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:45 AM				07:00 AM			
+0 mins.	0	**8**	0	8	0	0	**15**	**15**	0	**3**	0	3	0	0	0	0
+15 mins.	0	7	**2**	**9**	0	0	8	8	0	3	**1**	**4**	0	0	0	0
+30 mins.	0	8	0	8	0	0	8	8	**2**	2	0	4	0	0	0	0
+45 mins.	0	7	1	8	0	0	15	15	0	2	0	2	0	0	0	0
Total Volume	0	30	3	33	0	0	46	46	2	10	1	13	0	0	0	0
% App. Total	0	90.9	9.1		0	0	100		15.4	76.9	7.7		0	0	0	
PHF	.000	.938	.375	.917	.000	.000	.767	.767	.250	.833	.250	.813	.000	.000	.000	.000

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County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: I-8 Westbound Ramps
Weather: Clear

File Name : 09_CIM_Evan_8W PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Evan Hewes Highway Southbound				I-8 Westbound Off Ramp Westbound				Evan Hewes Highway Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	17	0	17	1	0	8	9	0	1	0	1	0	0	0	0	27
04:15 PM	0	11	1	12	1	0	11	12	1	1	0	2	0	0	0	0	26
04:30 PM	0	12	1	13	0	0	6	6	0	1	0	1	0	0	0	0	20
04:45 PM	0	15	2	17	1	0	5	6	0	2	0	2	0	0	0	0	25
Total	0	55	4	59	3	0	30	33	1	5	0	6	0	0	0	0	98
05:00 PM	0	11	2	13	1	0	13	14	1	2	0	3	0	0	0	0	30
05:15 PM	0	11	1	12	1	0	14	15	0	0	0	0	0	0	0	0	27
05:30 PM	0	9	2	11	1	0	6	7	0	1	0	1	0	0	0	0	19
05:45 PM	0	1	0	1	0	1	11	12	0	0	0	0	0	0	0	0	13
Total	0	32	5	37	3	1	44	48	1	3	0	4	0	0	0	0	89
Grand Total	0	87	9	96	6	1	74	81	2	8	0	10	0	0	0	0	187
Apprch %	0	90.6	9.4		7.4	1.2	91.4		20	80	0		0	0	0		
Total %	0	46.5	4.8	51.3	3.2	0.5	39.6	43.3	1.1	4.3	0	5.3	0	0	0	0	

	Evan Hewes Highway Southbound				I-8 Westbound Off Ramp Westbound				Evan Hewes Highway Northbound				I-8 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	12	1	13	0	0	6	6	0	1	0	1	0	0	0	0	20
04:45 PM	0	**15**	**2**	**17**	**1**	0	5	6	0	**2**	0	2	0	0	0	0	25
05:00 PM	0	11	2	13	1	0	13	14	**1**	2	0	**3**	0	0	0	0	**30**
05:15 PM	0	11	1	12	1	0	**14**	**15**	0	0	0	0	0	0	0	0	27
Total Volume	0	49	6	55	3	0	38	41	1	5	0	6	0	0	0	0	102
% App. Total	0	89.1	10.9		7.3	0	92.7		16.7	83.3	0		0	0	0		
PHF	.000	.817	.750	.809	.750	.000	.679	.683	.250	.625	.000	.500	.000	.000	.000	.000	.850

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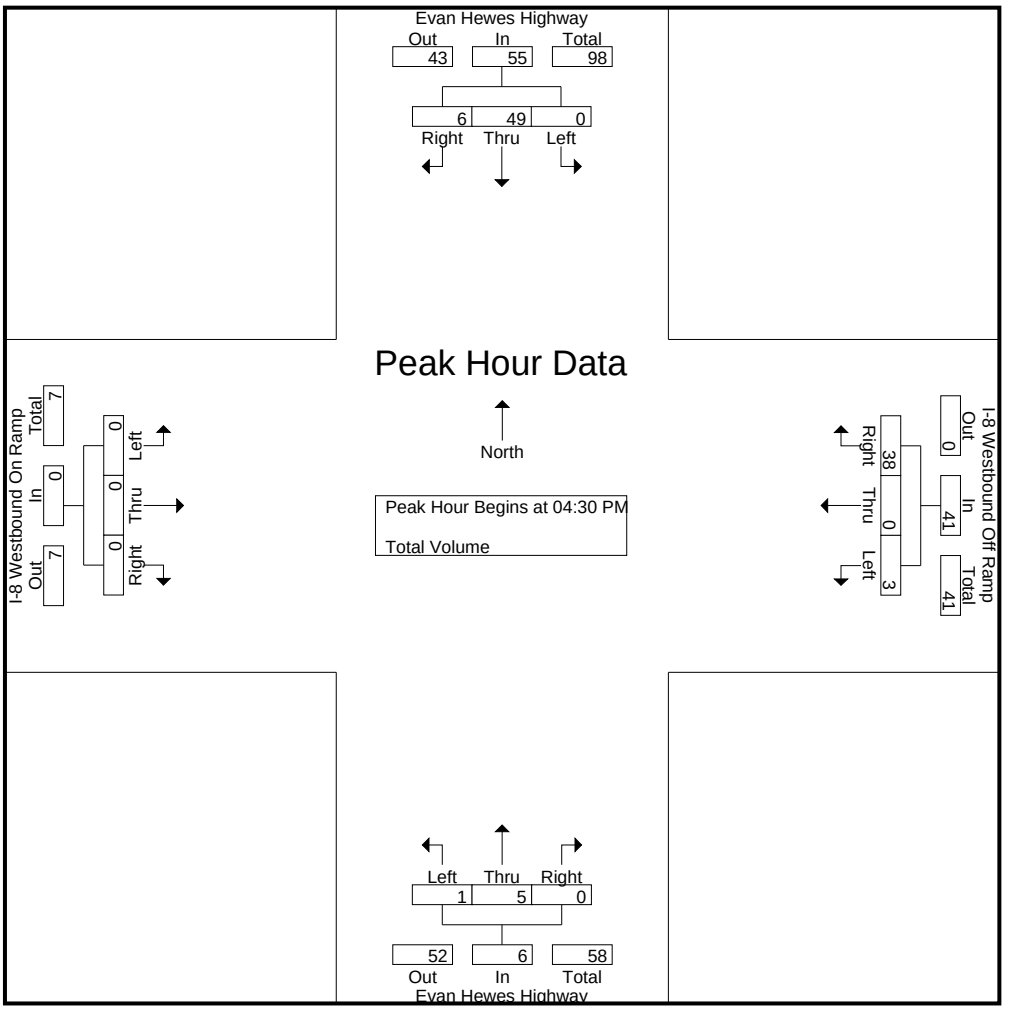
County of Imperial
N/S: Evan Hewes Highway (SR-115)
E/W: I-8 Westbound Ramps
Weather: Clear

File Name : 09_CIM_Evan_8W PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:15 PM				04:00 PM			
+0 mins.	0	**17**	0	**17**	**1**	0	13	14	**1**	1	0	2	0	0	0	0
+15 mins.	0	11	1	12	1	0	**14**	**15**	0	1	0	1	0	0	0	0
+30 mins.	0	12	1	13	1	0	6	7	0	**2**	0	2	0	0	0	0
+45 mins.	0	15	**2**	17	0	**1**	11	12	1	2	0	**3**	0	0	0	0
Total Volume	0	55	4	59	3	1	44	48	2	6	0	8	0	0	0	0
% App. Total	0	93.2	6.8		6.2	2.1	91.7		25	75	0		0	0	0	
PHF	.000	.809	.500	.868	.750	.250	.786	.800	.500	.750	.000	.667	.000	.000	.000	.000

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County of Imperial
N/S: Evan Hewes Hwy/Vanderlinden Rd
E/W: I-8 Eastbound Ramps
Weather: Clear

File Name : 10_CIM_Vander_8E AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

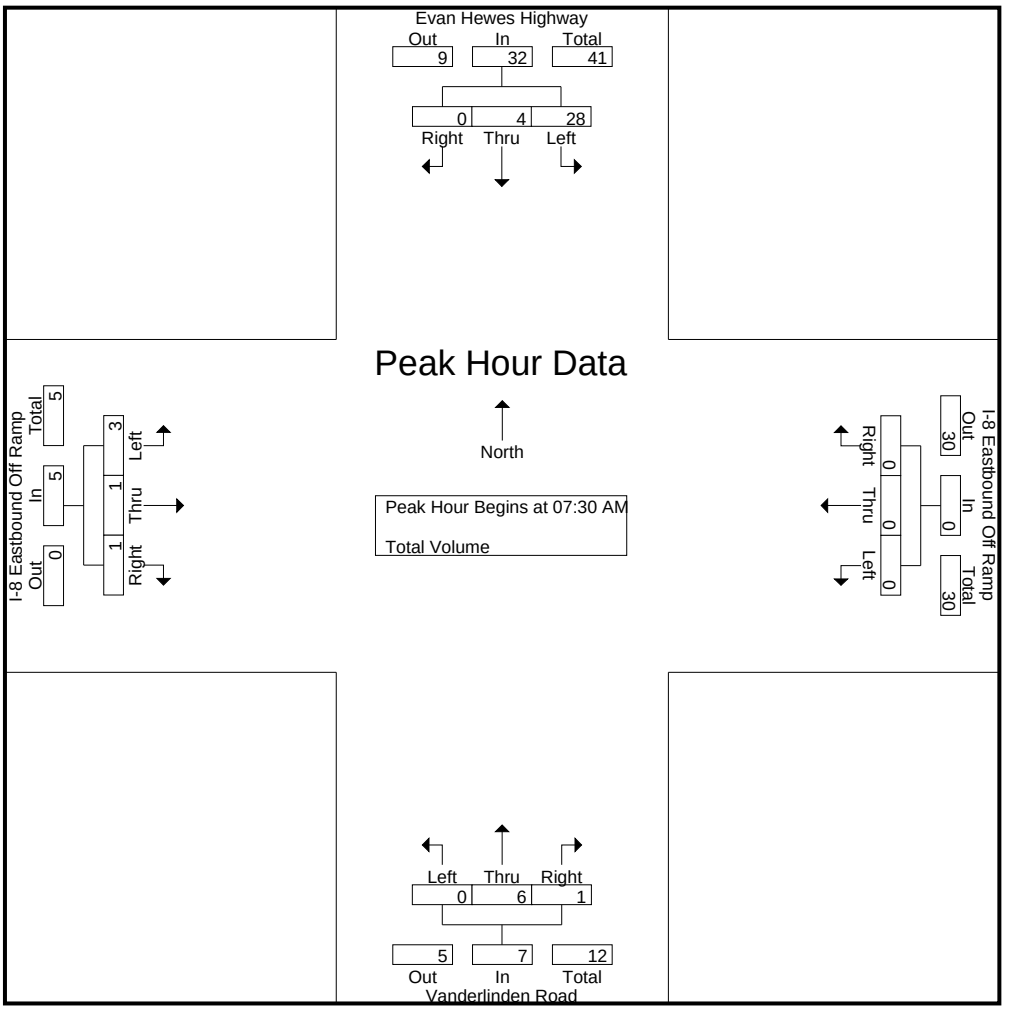
	Evan Hewes Highway Southbound				I-8 Eastbound Off Ramp Westbound				Vanderlinden Road Northbound				I-8 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	0	0	4	0	0	0	0	0	0	0	0	3	0	0	3	7
07:15 AM	7	1	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8
07:30 AM	9	0	0	9	0	0	0	0	0	0	1	1	0	1	1	2	12
07:45 AM	8	0	0	8	0	0	0	0	0	2	0	2	1	0	0	1	11
Total	28	1	0	29	0	0	0	0	0	2	1	3	4	1	1	6	38
08:00 AM	6	1	0	7	0	0	0	0	0	2	0	2	0	0	0	0	9
08:15 AM	5	3	0	8	0	0	0	0	0	2	0	2	2	0	0	2	12
08:30 AM	4	2	0	6	0	0	0	0	0	2	0	2	0	0	1	1	9
08:45 AM	7	0	0	7	0	0	0	0	0	0	0	0	3	0	0	3	10
Total	22	6	0	28	0	0	0	0	0	6	0	6	5	0	1	6	40
Grand Total	50	7	0	57	0	0	0	0	0	8	1	9	9	1	2	12	78
Apprch %	87.7	12.3	0		0	0	0		0	88.9	11.1		75	8.3	16.7		
Total %	64.1	9	0	73.1	0	0	0	0	0	10.3	1.3	11.5	11.5	1.3	2.6	15.4	

	Evan Hewes Highway Southbound				I-8 Eastbound Off Ramp Westbound				Vanderlinden Road Northbound				I-8 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**9**	0	0	**9**	0	0	0	0	0	0	**1**	1	0	**1**	**1**	**2**	**12**
07:45 AM	8	0	0	8	0	0	0	0	0	**2**	0	**2**	1	0	0	1	11
08:00 AM	6	1	0	7	0	0	0	0	0	2	0	2	0	0	0	0	9
08:15 AM	5	**3**	0	8	0	0	0	0	0	2	0	2	**2**	0	0	2	12
Total Volume	28	4	0	32	0	0	0	0	0	6	1	7	3	1	1	5	44
% App. Total	87.5	12.5	0		0	0	0		0	85.7	14.3		60	20	20		
PHF	.778	.333	.000	.889	.000	.000	.000	.000	.000	.750	.250	.875	.375	.250	.250	.625	.917

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

County of Imperial
N/S: Evan Hewes Hwy/Vanderlinden Rd
E/W: I-8 Eastbound Ramps
Weather: Clear

File Name : 10_CIM_Vander_8E AM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:45 AM				07:00 AM			
+0 mins.	7	**1**	0	8	0	0	0	0	0	**2**	0	**2**	**3**	0	0	**3**
+15 mins.	**9**	0	0	**9**	0	0	0	0	0	2	0	2	0	0	0	0
+30 mins.	8	0	0	8	0	0	0	0	0	2	0	2	0	**1**	**1**	2
+45 mins.	6	1	0	7	0	0	0	0	0	2	0	2	1	0	0	1
Total Volume	30	2	0	32	0	0	0	0	0	8	0	8	4	1	1	6
% App. Total	93.8	6.2	0		0	0	0		0	100	0		66.7	16.7	16.7	
PHF	.833	.500	.000	.889	.000	.000	.000	.000	.000	1.000	.000	1.000	.333	.250	.250	.500

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County of Imperial
N/S: Evan Hewes Hwy/Vanderlinden Rd
E/W: I-8 Eastbound Ramps
Weather: Clear

File Name : 10_CIM_Vander_8E PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 1

Groups Printed- Total Volume

	Evan Hewes Highway Southbound				I-8 Eastbound Off Ramp Westbound				Vanderlinden Road Northbound				I-8 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	14	1	0	15	0	0	0	0	0	1	2	3	0	0	0	0	18
04:15 PM	13	2	0	15	0	0	0	0	0	1	1	2	0	1	0	1	18
04:30 PM	13	1	0	14	0	0	0	0	0	2	0	2	0	0	0	0	16
04:45 PM	12	1	0	13	0	0	0	0	0	0	0	0	3	0	0	3	16
Total	52	5	0	57	0	0	0	0	0	4	3	7	3	1	0	4	68
05:00 PM	11	0	0	11	0	0	0	0	0	1	1	2	1	0	0	1	14
05:15 PM	10	1	0	11	0	0	0	0	0	0	0	0	0	0	0	0	11
05:30 PM	11	1	0	12	0	0	0	0	0	0	1	1	1	0	0	1	14
05:45 PM	1	0	0	1	0	0	0	0	0	0	1	1	1	1	2	4	6
Total	33	2	0	35	0	0	0	0	0	1	3	4	3	1	2	6	45
Grand Total	85	7	0	92	0	0	0	0	0	5	6	11	6	2	2	10	113
Apprch %	92.4	7.6	0		0	0	0		0	45.5	54.5		60	20	20		
Total %	75.2	6.2	0	81.4	0	0	0	0	0	4.4	5.3	9.7	5.3	1.8	1.8	8.8	

	Evan Hewes Highway Southbound				I-8 Eastbound Off Ramp Westbound				Vanderlinden Road Northbound				I-8 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**14**	1	0	**15**	0	0	0	0	0	1	**2**	**3**	0	0	0	0	**18**
04:15 PM	13	**2**	0	15	0	0	0	0	0	1	1	2	0	**1**	0	1	18
04:30 PM	13	1	0	14	0	0	0	0	0	**2**	0	2	0	0	0	0	16
04:45 PM	12	1	0	13	0	0	0	0	0	0	0	0	**3**	0	0	**3**	16
Total Volume	52	5	0	57	0	0	0	0	0	4	3	7	3	1	0	4	68
% App. Total	91.2	8.8	0		0	0	0		0	57.1	42.9		75	25	0		
PHF	.929	.625	.000	.950	.000	.000	.000	.000	.000	.500	.375	.583	.250	.250	.000	.333	.944

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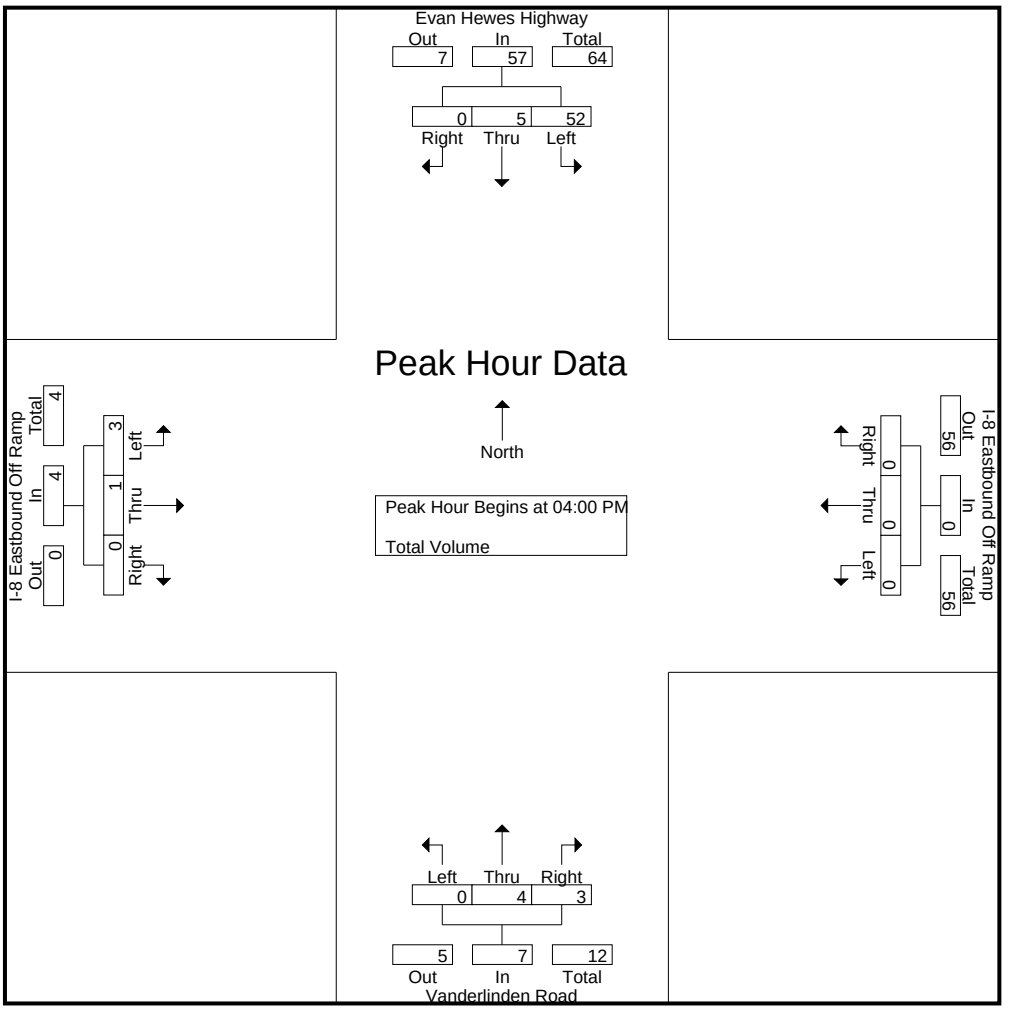
County of Imperial
N/S: Evan Hewes Hwy/Vanderlinden Rd
E/W: I-8 Eastbound Ramps
Weather: Clear

File Name : 10_CIM_Vander_8E PM
Site Code : 99920467
Start Date : 12/18/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				05:00 PM			
+0 mins.	**14**	1	0	**15**	0	0	0	0	0	1	**2**	**3**	**1**	0	0	1
+15 mins.	13	**2**	0	15	0	0	0	0	0	1	1	2	0	0	0	0
+30 mins.	13	1	0	14	0	0	0	0	0	**2**	0	2	1	0	0	1
+45 mins.	12	1	0	13	0	0	0	0	0	0	0	0	1	**1**	**2**	**4**
Total Volume	52	5	0	57	0	0	0	0	0	4	3	7	3	1	2	6
% App. Total	91.2	8.8	0		0	0	0		0	57.1	42.9		50	16.7	33.3	
PHF	.929	.625	.000	.950	.000	.000	.000	.000	.000	.500	.375	.583	.750	.250	.250	.375

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County of Imperial
Snyder Road
B/ Hoyt Road - Walnut Avenue / Ogier Road
24 Hour Directional Volume Count

CIM001
Site Code: 999-20467

Start Time	12/18/2020 Fri	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		2	4			0	11				
12:15		2	7			2	8				
12:30		0	6			3	4				
12:45		2	6	6	23	0	12	5	35	11	58
01:00		0	8			0	8				
01:15		0	7			0	7				
01:30		0	4			2	6				
01:45		0	4	0	23	2	6	4	27	4	50
02:00		4	6			0	6				
02:15		1	**7**			0	17				
02:30		0	**8**			0	8				
02:45		2	**25**	7	46	0	**16**	0	47	7	93
03:00		0	**10**			4	**12**				
03:15		3	6			1	**18**				
03:30		0	6			1	**12**				
03:45		4	8	7	30	2	12	8	54	15	84
04:00		3	9			0	2				
04:15		3	4			3	5				
04:30		4	12			0	4				
04:45		3	2	13	27	0	4	3	15	16	42
05:00		2	4			1	0				
05:15		8	2			6	6				
05:30		16	4			9	4				
05:45		17	0	43	10	9	4	25	14	68	24
06:00		7	1			6	0				
06:15		2	2			4	4				
06:30		**18**	1			5	4				
06:45		**14**	3	41	7	3	0	18	8	59	15
07:00		**16**	2			5	5				
07:15		**11**	6			10	5				
07:30		13	3			4	1				
07:45		4	2	44	13	**14**	0	33	11	77	24
08:00		4	2			**10**	2				
08:15		3	0			**11**	4				
08:30		4	4			**8**	0				
08:45		13	1	24	7	9	3	38	9	62	16
09:00		10	2			4	1				
09:15		8	2			8	0				
09:30		12	1			6	4				
09:45		4	2	34	7	4	6	22	11	56	18
10:00		10	0			10	2				
10:15		8	2			7	4				
10:30		8	0			13	0				
10:45		3	0	29	2	4	1	34	7	63	9
11:00		10	1			7	2				
11:15		14	0			6	1				
11:30		12	0			13	4				
11:45		10	0	46	1	12	1	38	8	84	9
Total		294	196	294	196	228	246	228	246	522	442
Combined Total		490		490		474		474		964	
AM Peak	-	06:30	-	-	-	07:45	-	-	-	-	-
Vol.	-	59	-	-	-	43	-	-	-	-	-
P.H.F.		0.819				0.768					
PM Peak	-	-	02:15	-	-	-	02:45	-	-	-	-
Vol.	-	-	50	-	-	-	58	-	-	-	-
P.H.F.			0.500				0.806				
Percentage		60.0%	40.0%			48.1%	51.9%				
ADT/AADT		ADT 964		AADT 964							

Counts Unlimited, Inc.
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City of Holtville
State Route 115
B/ Walnut Avenue - Maple Avenue
24 Hour Directional Volume Count

HVE006
Site Code: 999-20467

Start Time	12/18/2020 Fri	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		5	68			6	66				
12:15		8	61			4	62				
12:30		4	45			4	60				
12:45		4	53	21	227	2	57	16	245	37	472
01:00		4	70			6	42				
01:15		3	54			3	66				
01:30		7	67			1	43				
01:45		4	58	18	249	4	41	14	192	32	441
02:00		3	56			2	41				
02:15		7	51			3	69				
02:30		3	60			2	41				
02:45		3	51	16	218	3	**47**	10	198	26	416
03:00		5	62			4	**65**				
03:15		6	68			7	**65**				
03:30		1	56			2	**69**				
03:45		1	49	13	235	8	44	21	243	34	478
04:00		5	**71**			8	53				
04:15		5	**66**			7	54				
04:30		8	**63**			6	57				
04:45		8	**61**	26	261	20	44	41	208	67	469
05:00		4	70			11	45				
05:15		30	64			15	41				
05:30		28	46			28	36				
05:45		34	40	96	220	30	41	84	163	180	383
06:00		37	54			26	29				
06:15		27	67			31	37				
06:30		31	37			25	32				
06:45		32	47	127	205	16	44	98	142	225	347
07:00		18	39			37	23				
07:15		24	30			33	28				
07:30		29	31			55	23				
07:45		43	32	114	132	52	23	177	97	291	229
08:00		47	24			33	21				
08:15		24	22			41	14				
08:30		33	29			34	18				
08:45		44	18	148	93	41	13	149	66	297	159
09:00		35	25			37	20				
09:15		37	10			29	11				
09:30		32	16			43	12				
09:45		43	19	147	70	52	9	161	52	308	122
10:00		32	12			39	17				
10:15		41	11			45	16				
10:30		41	14			52	13				
10:45		51	13	165	50	47	10	183	56	348	106
11:00		**43**	6			**61**	4				
11:15		**52**	9			**62**	7				
11:30		**56**	12			**53**	9				
11:45		**57**	7	208	34	**48**	4	224	24	432	58
Total		1099	1994	1099	1994	1178	1686	1178	1686	2277	3680
Combined Total		3093		3093		2864		2864		5957	
AM Peak	-	11:00	-	-	-	11:00	-	-	-	-	-
Vol.	-	208	-	-	-	224	-	-	-	-	-
P.H.F.		0.912				0.903					
PM Peak	-	-	04:00	-	-	-	02:45	-	-	-	-
Vol.	-	-	261	-	-	-	246	-	-	-	-
P.H.F.			0.919				0.891				
Percentage		35.5%	64.5%			41.1%	58.9%				
ADT/AADT		ADT 5,957		AADT 5,957							

Counts Unlimited, Inc.
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County of Imperial
Orchard Road
B/ State Route 7 - State Route 115
24 Hour Directional Volume Count

CIM005
Site Code: 999-20467

Start Time	12/18/2020 Fri	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		5	40			4	56				
12:15		6	40			1	55				
12:30		1	45			4	42				
12:45		1	32	13	157	2	37	11	190	24	347
01:00		0	**44**			4	48				
01:15		3	**30**			2	44				
01:30		3	**46**			1	38				
01:45		1	**56**	7	176	2	24	9	154	16	330
02:00		1	40			2	30				
02:15		5	34			1	58				
02:30		2	45			4	41				
02:45		6	28	14	147	2	35	9	164	23	311
03:00		2	34			1	46				
03:15		4	37			2	**41**				
03:30		4	29			3	**42**				
03:45		6	42	16	142	12	**54**	18	183	34	325
04:00		8	44			2	**58**				
04:15		6	34			4	30				
04:30		6	31			6	50				
04:45		8	32	28	141	6	33	18	171	46	312
05:00		8	35			10	36				
05:15		23	44			10	34				
05:30		18	34			29	33				
05:45		26	32	75	145	14	26	63	129	138	274
06:00		20	30			29	24				
06:15		31	22			22	26				
06:30		50	23			29	22				
06:45		28	19	129	94	22	14	102	86	231	180
07:00		44	30			27	30				
07:15		33	20			35	16				
07:30		39	22			49	24				
07:45		**50**	26	166	98	39	15	150	85	316	183
08:00		**47**	26			40	14				
08:15		**35**	16			30	6				
08:30		**40**	20			26	13				
08:45		39	11	161	73	**40**	8	136	41	297	114
09:00		33	16			**30**	8				
09:15		32	12			**51**	8				
09:30		20	12			**44**	8				
09:45		33	14	118	54	30	8	155	32	273	86
10:00		38	8			40	6				
10:15		23	8			33	8				
10:30		32	5			32	6				
10:45		36	12	129	33	45	3	150	23	279	56
11:00		32	6			34	3				
11:15		42	4			36	6				
11:30		29	4			36	2				
11:45		38	6	141	20	51	3	157	14	298	34
Total		997	1280	997	1280	978	1272	978	1272	1975	2552
Combined Total		2277		2277		2250		2250		4527	
AM Peak	-	07:45	-	-	-	08:45	-	-	-	-	-
Vol.	-	172	-	-	-	165	-	-	-	-	-
P.H.F.		0.860				0.809					
PM Peak	-	-	01:00	-	-	-	03:15	-	-	-	-
Vol.	-	-	176	-	-	-	195	-	-	-	-
P.H.F.			0.786				0.841				
Percentage		43.8%	56.2%			43.5%	56.5%				
ADT/AADT		ADT 4,527		AADT 4,527							

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County of Imperial
Nelson Pit Road
B/ Project Site - Evan Hewes Highway
24 Hour Directional Volume Count

CIM003
Site Code: 999-20467

Start Time	12/18/2020 Fri	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	1			0	2				
12:15		0	0			0	0				
12:30		0	0			1	0				
12:45		0	**2**	0	3	0	0	1	2	1	5
01:00		0	**1**			0	0				
01:15		0	**1**			0	0				
01:30		0	**1**			0	0				
01:45		0	2	0	5	0	3	0	3	0	8
02:00		0	0			0	0				
02:15		0	0			0	0				
02:30		0	2			0	0				
02:45		0	0	0	2	0	2	0	2	0	4
03:00		0	0			0	0				
03:15		0	2			0	0				
03:30		0	0			0	**1**				
03:45		0	0	0	2	0	**1**	0	2	0	4
04:00		0	0			0	**1**				
04:15		0	1			0	**1**				
04:30		0	0			0	0				
04:45		0	1	0	2	0	2	0	4	0	6
05:00		0	0			0	0				
05:15		0	1			0	0				
05:30		0	1			2	1				
05:45		0	0	0	2	0	0	2	1	2	3
06:00		0	0			1	0				
06:15		2	0			1	0				
06:30		0	0			2	0				
06:45		0	0	2	0	0	0	4	0	6	0
07:00		0	0			0	0				
07:15		**2**	0			1	1				
07:30		**0**	0			0	0				
07:45		**3**	0	5	0	0	0	1	1	6	1
08:00		**2**	0			1	0				
08:15		1	0			0	0				
08:30		0	1			**0**	0				
08:45		1	0	4	1	**3**	0	4	0	8	1
09:00		2	0			**1**	0				
09:15		0	0			**1**	0				
09:30		1	0			0	0				
09:45		3	0	6	0	0	0	2	0	8	0
10:00		0	0			0	0				
10:15		1	0			0	0				
10:30		2	0			2	0				
10:45		1	0	4	0	0	1	2	1	6	1
11:00		0	0			1	0				
11:15		1	0			1	0				
11:30		0	0			0	0				
11:45		1	0	2	0	3	0	5	0	7	0
Total		23	17	23	17	21	16	21	16	44	33
Combined Total		40		40		37		37		77	
AM Peak	-	07:15	-	-	-	08:30	-	-	-	-	-
Vol.	-	7	-	-	-	5	-	-	-	-	-
P.H.F.		0.583				0.417					
PM Peak	-	-	00:45	-	-	-	03:30	-	-	-	-
Vol.	-	-	5	-	-	-	4	-	-	-	-
P.H.F.			0.625				0.333				
Percentage		57.5%	42.5%			56.8%	43.2%				
ADT/AADT		ADT 77		AADT 77							

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County of Imperial
Miller Road
B/ Evan Hewes Highway - Nelson Pit Road
24 Hour Directional Volume Count

CIM004
Site Code: 999-20467

Start Time	12/18/2020 Fri	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		5	8			0	2				
12:15		0	2			8	2				
12:30		1	2			1	4				
12:45		2	4	8	16	2	**8**	11	16	19	32
01:00		0	4			0	**10**				
01:15		0	8			2	**4**				
01:30		2	2			4	**8**				
01:45		0	0	2	14	2	4	8	26	10	40
02:00		0	4			2	6				
02:15		0	4			4	0				
02:30		0	**10**			2	2				
02:45		2	**8**	2	26	10	7	18	15	20	41
03:00		0	**6**			2	5				
03:15		3	**6**			1	0				
03:30		0	1			2	2				
03:45		0	2	3	15	2	3	7	10	10	25
04:00		2	2			3	2				
04:15		0	0			0	2				
04:30		0	2			1	4				
04:45		0	4	2	8	0	1	4	9	6	17
05:00		2	0			4	1				
05:15		1	1			0	0				
05:30		0	0			2	2				
05:45		0	1	3	2	0	0	6	3	9	5
06:00		0	1			4	0				
06:15		3	4			3	0				
06:30		7	2			4	1				
06:45		3	1	13	8	0	0	11	1	24	9
07:00		**5**	6			2	0				
07:15		**5**	0			3	4				
07:30		**3**	0			0	2				
07:45		**14**	0	27	6	4	2	9	8	36	14
08:00		4	0			2	0				
08:15		1	0			7	0				
08:30		8	1			2	0				
08:45		2	2	15	3	4	0	15	0	30	3
09:00		5	0			5	2				
09:15		2	0			2	0				
09:30		4	0			4	0				
09:45		2	2	13	2	2	1	13	3	26	5
10:00		4	2			6	8				
10:15		1	0			1	0				
10:30		12	1			2	1				
10:45		4	0	21	3	**5**	2	14	11	35	14
11:00		4	0			**3**	0				
11:15		4	0			**6**	2				
11:30		4	0			**8**	0				
11:45		2	0	14	0	3	0	20	2	34	2
Total		123	103	123	103	136	104	136	104	259	207
Combined Total		226		226		240		240		466	
AM Peak	-	07:00	-	-	-	10:45	-	-	-	-	-
Vol.	-	27	-	-	-	22	-	-	-	-	-
P.H.F.		0.482				0.550					
PM Peak	-	-	02:30	-	-	-	00:45	-	-	-	-
Vol.	-	-	30	-	-	-	30	-	-	-	-
P.H.F.			0.750				0.750				
Percentage		54.4%	45.6%			56.7%	43.3%				
ADT/AADT		ADT 466		AADT 466							

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County of Imperial
Snyder Road
B/ Norrish Road - Evan Hewes Highway
24 Hour Directional Volume Count

CIM007
Site Code: 999-20467

Start Time	12/18/2020 Fri	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	4			1	4				
12:15		1	3			2	4				
12:30		0	4			0	7				
12:45		0	0	1	11	0	6	3	21	4	32
01:00		0	5			0	4				
01:15		0	**8**			0	6				
01:30		0	**5**			1	4				
01:45		1	**4**	1	22	0	8	1	22	2	44
02:00		1	**8**			0	4				
02:15		1	8			0	9				
02:30		0	2			0	2				
02:45		1	7	3	25	0	**10**	0	25	3	50
03:00		0	8			0	**10**				
03:15		0	4			0	**10**				
03:30		0	2			0	**11**				
03:45		0	4	0	18	0	5	0	36	0	54
04:00		0	8			0	3				
04:15		0	2			1	2				
04:30		3	2			0	2				
04:45		3	1	6	13	0	2	1	9	7	22
05:00		0	1			0	2				
05:15		1	0			0	1				
05:30		8	2			0	4				
05:45		7	0	16	3	0	1	0	8	16	11
06:00		9	0			4	1				
06:15		8	2			3	1				
06:30		7	0			4	0				
06:45		5	1	29	3	3	2	14	4	43	7
07:00		8	1			6	0				
07:15		3	1			2	2				
07:30		6	1			4	0				
07:45		1	0	18	3	2	1	14	3	32	6
08:00		4	0			5	0				
08:15		4	0			3	5				
08:30		5	4			3	1				
08:45		8	0	21	4	**5**	1	16	7	37	11
09:00		4	0			**4**	1				
09:15		12	0			**12**	0				
09:30		4	1			**6**	0				
09:45		3	0	23	1	1	4	23	5	46	6
10:00		**8**	1			7	0				
10:15		**8**	0			4	2				
10:30		**9**	1			2	0				
10:45		**9**	1	34	3	3	0	16	2	50	5
11:00		4	2			8	0				
11:15		8	0			6	0				
11:30		8	0			5	1				
11:45		4	0	24	2	2	0	21	1	45	3
Total		176	108	176	108	109	143	109	143	285	251
Combined Total		284		284		252		252		536	
AM Peak	-	10:00	-	-	-	08:45	-	-	-	-	-
Vol.	-	34	-	-	-	27	-	-	-	-	-
P.H.F.		0.708				0.563					
PM Peak	-	-	01:15	-	-	-	02:45	-	-	-	-
Vol.	-	-	25	-	-	-	41	-	-	-	-
P.H.F.			0.781				0.932				
Percentage		62.0%	38.0%			43.3%	56.7%				
ADT/AADT		ADT 536		AADT 536							

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County of Imperial
Evan Hewes Highway
B/ Snyder Road - Vanderlinden Road
24 Hour Directional Volume Count

CIM002
Site Code: 999-20467

Start Time	12/18/2020 Fri	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		4	12			2	20				
12:15		6	32			4	12				
12:30		4	21			4	12				
12:45		8	16	22	81	6	16	16	60	38	141
01:00		0	26			1	12				
01:15		4	12			6	20				
01:30		6	20			3	11				
01:45		11	26	21	84	1	10	11	53	32	137
02:00		8	27			4	12				
02:15		1	18			1	18				
02:30		0	**22**			0	**17**				
02:45		2	**26**	11	93	6	**18**	11	65	22	158
03:00		13	**30**			3	**21**				
03:15		2	**28**			11	**30**				
03:30		0	16			1	12				
03:45		4	20	19	94	12	21	27	84	46	178
04:00		2	32			9	15				
04:15		8	16			8	18				
04:30		4	26			12	12				
04:45		6	20	20	94	13	10	42	55	62	149
05:00		8	17			6	26				
05:15		8	16			9	22				
05:30		12	16			7	13				
05:45		10	4	38	53	10	12	32	73	70	126
06:00		18	12			8	18				
06:15		15	23			5	11				
06:30		8	10			10	10				
06:45		12	6	53	51	11	9	34	48	87	99
07:00		10	10			20	8				
07:15		13	9			14	18				
07:30		13	7			14	8				
07:45		20	12	56	38	20	6	68	40	124	78
08:00		16	4			10	6				
08:15		12	4			12	7				
08:30		14	8			12	4				
08:45		6	4	48	20	8	7	42	24	90	44
09:00		26	17			10	7				
09:15		11	1			**20**	10				
09:30		7	6			**14**	4				
09:45		18	10	62	34	**15**	3	59	24	121	58
10:00		18	2			**24**	8				
10:15		24	6			10	10				
10:30		20	10			16	8				
10:45		20	1	82	19	22	8	72	34	154	53
11:00		**33**	12			16	7				
11:15		**8**	6			16	4				
11:30		**29**	6			11	3				
11:45		**34**	3	104	27	16	2	59	16	163	43
Total		536	688	536	688	473	576	473	576	1009	1264
Combined Total		1224		1224		1049		1049		2273	
AM Peak	-	11:00	-	-	-	09:15	-	-	-	-	-
Vol.	-	104	-	-	-	73	-	-	-	-	-
P.H.F.		0.765				0.760					
PM Peak	-	-	02:30	-	-	-	02:30	-	-	-	-
Vol.	-	-	106	-	-	-	86	-	-	-	-
P.H.F.			0.883				0.717				
Percentage		43.8%	56.2%			45.1%	54.9%				
ADT/AADT		ADT 2,273		AADT 2,273							

APPENDIX B: SYNCHRO REPORT OF EXISTING CONDITIONS

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	3	0	7	0	8	2	103	7	4	82	0
Future Vol, veh/h	0	3	0	7	0	8	2	103	7	4	82	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	0	8	0	9	2	112	8	4	89	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	222	221	89	219	217	116	89	0	0	120	0	0
Stage 1	97	97	-	120	120	-	-	-	-	-	-	-
Stage 2	125	124	-	99	97	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	734	678	969	737	681	936	1506	-	-	1468	-	-
Stage 1	910	815	-	884	796	-	-	-	-	-	-	-
Stage 2	879	793	-	907	815	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	725	675	969	732	678	936	1506	-	-	1468	-	-
Mov Cap-2 Maneuver	725	675	-	732	678	-	-	-	-	-	-	-
Stage 1	909	813	-	883	795	-	-	-	-	-	-	-
Stage 2	870	792	-	901	813	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	9.4	0.1	0.3
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1506	-	-	675	828	1468	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.02	0.003	-	-
HCM Control Delay (s)	7.4	0	-	10.4	9.4	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	1	0	0	2	0	0	0	0	1	0	0
Future Vol, veh/h	0	1	0	0	2	0	0	0	0	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	50	50	50	50	50	50	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	0	0	4	0	0	0	0	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	4	0	0	2	0	0	6	6	2	6	6	4
Stage 1	-	-	-	-	-	-	2	2	-	4	4	-
Stage 2	-	-	-	-	-	-	4	4	-	2	2	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1618	-	-	1620	-	-	1014	889	1082	1014	889	1080
Stage 1	-	-	-	-	-	-	1021	894	-	1018	892	-
Stage 2	-	-	-	-	-	-	1018	892	-	1021	894	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1618	-	-	1620	-	-	1014	889	1082	1014	889	1080
Mov Cap-2 Maneuver	-	-	-	-	-	-	1014	889	-	1014	889	-
Stage 1	-	-	-	-	-	-	1021	894	-	1018	892	-
Stage 2	-	-	-	-	-	-	1018	892	-	1021	894	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	8.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1618	-	-	1620	-	-	1014
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.002
HCM Control Delay (s)	0	0	-	-	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	2	35	2	2	41	7	7	8	2	11	11	2
Future Vol, veh/h	2	35	2	2	41	7	7	8	2	11	11	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	47	3	3	55	9	9	11	3	15	15	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	50	0	0	130	125	49	128	122	60
Stage 1	-	-	-	-	-	-	55	55	-	66	66	-
Stage 2	-	-	-	-	-	-	75	70	-	62	56	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1538	-	-	1557	-	-	843	765	1020	845	768	1005
Stage 1	-	-	-	-	-	-	957	849	-	945	840	-
Stage 2	-	-	-	-	-	-	934	837	-	949	848	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1538	-	-	1557	-	-	826	762	1020	831	765	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	826	762	-	831	765	-
Stage 1	-	-	-	-	-	-	955	847	-	943	838	-
Stage 2	-	-	-	-	-	-	913	835	-	933	846	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.3	9.6	9.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	812	1538	-	-	1557	-	-	811
HCM Lane V/C Ratio	0.028	0.002	-	-	0.002	-	-	0.04
HCM Control Delay (s)	9.6	7.3	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	1	14	3	2	10
Future Vol, veh/h	4	1	14	3	2	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	1	18	4	3	13

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	39	20	0	0	22	0
Stage 1	20	-	-	-	-	-
Stage 2	19	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	973	1058	-	-	1593	-
Stage 1	1003	-	-	-	-	-
Stage 2	1004	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	971	1058	-	-	1593	-
Mov Cap-2 Maneuver	971	-	-	-	-	-
Stage 1	1003	-	-	-	-	-
Stage 2	1002	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	987	1593	-
HCM Lane V/C Ratio	-	-	0.007	0.002	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	1	1	0	0	0	1	46	0	1	42	0
Future Vol, veh/h	0	1	1	0	0	0	1	46	0	1	42	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	1	0	0	0	1	54	0	1	49	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	107	107	49	108	107	54	49	0	0	54	0	0
Stage 1	51	51	-	56	56	-	-	-	-	-	-	-
Stage 2	56	56	-	52	51	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	872	783	1020	871	783	1013	1558	-	-	1551	-	-
Stage 1	962	852	-	956	848	-	-	-	-	-	-	-
Stage 2	956	848	-	961	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	870	781	1020	868	781	1013	1558	-	-	1551	-	-
Mov Cap-2 Maneuver	870	781	-	868	781	-	-	-	-	-	-	-
Stage 1	961	851	-	955	847	-	-	-	-	-	-	-
Stage 2	955	847	-	958	851	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	0.2	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1558	-	-	885	-	1551	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	-	0.001	-	-
HCM Control Delay (s)	7.3	0	-	9.1	0	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	2	0	1	1	0	0	0	1	0	0	0
Future Vol, veh/h	1	2	0	1	1	0	0	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	50	50	50	50	50	50	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	4	0	2	2	0	0	0	2	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2	0	0	4	0	0	14	14	4	15	14	2
Stage 1	-	-	-	-	-	-	8	8	-	6	6	-
Stage 2	-	-	-	-	-	-	6	6	-	9	8	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1620	-	-	1618	-	-	1002	880	1080	1001	880	1082
Stage 1	-	-	-	-	-	-	1013	889	-	1016	891	-
Stage 2	-	-	-	-	-	-	1016	891	-	1012	889	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1620	-	-	1618	-	-	1000	878	1080	998	878	1082
Mov Cap-2 Maneuver	-	-	-	-	-	-	1000	878	-	998	878	-
Stage 1	-	-	-	-	-	-	1012	888	-	1015	890	-
Stage 2	-	-	-	-	-	-	1015	890	-	1009	888	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	3.6	8.3	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1080	1620	-	-	1618	-	-	-
HCM Lane V/C Ratio	0.002	0.001	-	-	0.001	-	-	-
HCM Control Delay (s)	8.3	7.2	0	-	7.2	0	-	0
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	1	0	1	0	0	0	16	4	1	10	1
Future Vol, veh/h	1	1	0	1	0	0	0	16	4	1	10	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	63	63	63	63	63	63	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	2	0	2	0	0	0	25	6	2	16	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	49	52	17	50	50	28	18	0	0	31	0	0
Stage 1	21	21	-	28	28	-	-	-	-	-	-	-
Stage 2	28	31	-	22	22	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	951	839	1062	950	841	1047	1599	-	-	1582	-	-
Stage 1	998	878	-	989	872	-	-	-	-	-	-	-
Stage 2	989	869	-	996	877	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	950	838	1062	948	840	1047	1599	-	-	1582	-	-
Mov Cap-2 Maneuver	950	838	-	948	840	-	-	-	-	-	-	-
Stage 1	998	877	-	989	872	-	-	-	-	-	-	-
Stage 2	989	869	-	993	876	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	8.8	0	0.6
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1599	-	-	890	948	1582	-	-
HCM Lane V/C Ratio	-	-	-	0.004	0.002	0.001	-	-
HCM Control Delay (s)	0	-	-	9.1	8.8	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	5	0	0	2	0	0	0	0	0	0	0
Future Vol, veh/h	0	5	0	0	2	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	58	58	58	58	58	58	58	58	58
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	9	0	0	3	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	3	0	0	9	0	0	12	12	9	12	12	3
Stage 1	-	-	-	-	-	-	9	9	-	3	3	-
Stage 2	-	-	-	-	-	-	3	3	-	9	9	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1619	-	-	1611	-	-	1005	883	1073	1005	883	1081
Stage 1	-	-	-	-	-	-	1012	888	-	1020	893	-
Stage 2	-	-	-	-	-	-	1020	893	-	1012	888	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1619	-	-	1611	-	-	1005	883	1073	1005	883	1081
Mov Cap-2 Maneuver	-	-	-	-	-	-	1005	883	-	1005	883	-
Stage 1	-	-	-	-	-	-	1012	888	-	1020	893	-
Stage 2	-	-	-	-	-	-	1020	893	-	1012	888	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1619	-	-	1611	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	2	14	1	4	1	14	15	3	1	16	1
Future Vol, veh/h	1	2	14	1	4	1	14	15	3	1	16	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	17	1	5	1	17	18	4	1	19	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	77	74	20	83	74	18	20	0	-	18	0	0
Stage 1	22	22	-	52	52	-	-	-	-	-	-	-
Stage 2	55	52	-	31	22	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	912	816	1058	904	816	1061	1596	-	0	1599	-	-
Stage 1	996	877	-	961	852	-	-	-	0	-	-	-
Stage 2	957	852	-	986	877	-	-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	898	806	1058	880	806	1061	1596	-	-	1599	-	-
Mov Cap-2 Maneuver	898	806	-	880	806	-	-	-	-	-	-	-
Stage 1	985	876	-	950	843	-	-	-	-	-	-	-
Stage 2	940	843	-	967	876	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	9.3	3.5	0.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1596	-	1010	852	1599	-	-
HCM Lane V/C Ratio	0.011	-	0.02	0.008	0.001	-	-
HCM Control Delay (s)	7.3	0	8.6	9.3	7.3	0	-
HCM Lane LOS	A	A	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	0	0	0	0	0	1	50	0	0	34	0
Future Vol, veh/h	1	0	0	0	0	0	1	50	0	0	34	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	0	0	0	1	63	0	0	43	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	108	108	43	108	108	63	43	0	0	63	0	0
Stage 1	43	43	-	65	65	-	-	-	-	-	-	-
Stage 2	65	65	-	43	43	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	871	782	1027	871	782	1002	1566	-	-	1540	-	-
Stage 1	971	859	-	946	841	-	-	-	-	-	-	-
Stage 2	946	841	-	971	859	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	870	781	1027	870	781	1002	1566	-	-	1540	-	-
Mov Cap-2 Maneuver	870	781	-	870	781	-	-	-	-	-	-	-
Stage 1	970	859	-	945	840	-	-	-	-	-	-	-
Stage 2	945	840	-	971	859	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	0.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1566	-	-	870	-	1540	-	-
HCM Lane V/C Ratio	0.001	-	-	0.001	-	-	-	-
HCM Control Delay (s)	7.3	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑			↰			↑	↱
Traffic Vol, veh/h	0	0	0	6	0	4	22	121	0	0	71	55
Future Vol, veh/h	0	0	0	6	0	4	22	121	0	0	71	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	7	0	4	24	134	0	0	79	61

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	261	261	134	79	0	-	-	-	0	
Stage 1	182	182	-	-	-	-	-	-	-	
Stage 2	79	79	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	728	644	915	1519	-	0	0	-	0	
Stage 1	849	749	-	-	-	0	0	-	0	
Stage 2	944	829	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	716	0	915	1519	-	-	-	-	-	
Mov Cap-2 Maneuver	716	0	-	-	-	-	-	-	-	
Stage 1	835	0	-	-	-	-	-	-	-	
Stage 2	944	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	9	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT
Capacity (veh/h)	1519	-	915	-
HCM Lane V/C Ratio	0.016	-	0.005	-
HCM Control Delay (s)	7.4	0	9	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	0	-	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑						↑↑	↱		↑	
Traffic Vol, veh/h	38	0	128	0	0	0	0	217	4	2	63	0
Future Vol, veh/h	38	0	128	0	0	0	0	217	4	2	63	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	0	135	0	0	0	0	228	4	2	66	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	184	302	66	-	0	0	232	0	0
Stage 1	70	70	-	-	-	-	-	-	-
Stage 2	114	232	-	-	-	-	-	-	-
Critical Hdwy	6.63	6.53	6.23	-	-	-	4.13	-	-
Critical Hdwy Stg 1	5.43	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	-	-	-	2.219	-	-
Pot Cap-1 Maneuver	797	610	997	0	-	-	1334	-	0
Stage 1	952	836	-	0	-	-	-	-	0
Stage 2	899	712	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	795	0	997	-	-	-	1334	-	-
Mov Cap-2 Maneuver	795	0	-	-	-	-	-	-	-
Stage 1	952	0	-	-	-	-	-	-	-
Stage 2	897	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	997	1334	-
HCM Lane V/C Ratio	-	-	0.135	0.002	-
HCM Control Delay (s)	-	-	9.2	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	3	1	3	8	29	0	0	30	1
Future Vol, veh/h	0	0	0	3	1	3	8	29	0	0	30	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	1	4	10	35	0	0	37	1

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	93	93	35	38	0	-	-	-	0	
Stage 1	55	55	-	-	-	-	-	-	-	
Stage 2	38	38	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	907	797	1038	1572	-	0	0	-	-	
Stage 1	968	849	-	-	-	0	0	-	-	
Stage 2	984	863	-	-	-	0	0	-	-	
Platoon blocked, %					-			-	-	
Mov Cap-1 Maneuver	902	0	1038	1572	-	-	-	-	-	
Mov Cap-2 Maneuver	902	0	-	-	-	-	-	-	-	
Stage 1	962	0	-	-	-	-	-	-	-	
Stage 2	984	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	8.8	1.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1572	-	902	1038	-	-
HCM Lane V/C Ratio	0.006	-	0.004	0.004	-	-
HCM Control Delay (s)	7.3	0	9	8.5	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	0	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	14	0	0	0	0	35	2	2	30	0
Future Vol, veh/h	4	0	14	0	0	0	0	35	2	2	30	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	18	0	0	0	0	45	3	3	38	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	91	-	38	-	0	0	48	0	0
Stage 1	44	-	-	-	-	-	-	-	-
Stage 2	47	-	-	-	-	-	-	-	-
Critical Hdwy	6.42	-	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	-	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	909	0	1034	0	-	-	1559	-	0
Stage 1	978	0	-	0	-	-	-	-	0
Stage 2	975	0	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	907	0	1034	-	-	-	1559	-	-
Mov Cap-2 Maneuver	907	0	-	-	-	-	-	-	-
Stage 1	978	0	-	-	-	-	-	-	-
Stage 2	973	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	907	1034	1559	-
HCM Lane V/C Ratio	-	-	0.006	0.017	0.002	-
HCM Control Delay (s)	-	-	9	8.5	7.3	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0.1	0	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	46	1	5	0	0	27	5
Future Vol, veh/h	0	0	0	0	0	46	1	5	0	0	27	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	57	1	6	0	0	33	6

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	44	47	6	39	0	-	-	-	0
Stage 1	8	8	-	-	-	-	-	-	-
Stage 2	36	39	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	967	845	1077	1571	-	0	0	-	-
Stage 1	1015	889	-	-	-	0	0	-	-
Stage 2	986	862	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	966	0	1077	1571	-	-	-	-	-
Mov Cap-2 Maneuver	966	0	-	-	-	-	-	-	-
Stage 1	1014	0	-	-	-	-	-	-	-
Stage 2	986	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1571	-	-	1077	-	-
HCM Lane V/C Ratio	0.001	-	-	0.053	-	-
HCM Control Delay (s)	7.3	0	0	8.5	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1	1	0	0	0	0	6	1	28	4	0
Future Vol, veh/h	3	1	1	0	0	0	0	6	1	28	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1	1	0	0	0	0	7	1	30	4	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	72	72	4	-	0	0	8	0	0
Stage 1	64	64	-	-	-	-	-	-	-
Stage 2	8	8	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	932	818	1080	0	-	-	1612	-	0
Stage 1	959	842	-	0	-	-	-	-	0
Stage 2	1015	889	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	914	0	1080	-	-	-	1612	-	-
Mov Cap-2 Maneuver	914	0	-	-	-	-	-	-	-
Stage 1	959	0	-	-	-	-	-	-	-
Stage 2	996	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0	6.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	914	1080	1612	-
HCM Lane V/C Ratio	-	-	0.005	0.001	0.019	-
HCM Control Delay (s)	-	-	9	8.3	7.3	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	5	1	8	0	75	1	8	110	1
Future Vol, veh/h	0	0	2	5	1	8	0	75	1	8	110	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	2	6	1	10	0	89	1	10	131	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	247	242	132	243	242	90	132	0	0	90	0	0
Stage 1	152	152	-	90	90	-	-	-	-	-	-	-
Stage 2	95	90	-	153	152	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	707	660	917	711	660	968	1453	-	-	1505	-	-
Stage 1	850	772	-	917	820	-	-	-	-	-	-	-
Stage 2	912	820	-	849	772	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	696	655	917	705	655	968	1453	-	-	1505	-	-
Mov Cap-2 Maneuver	696	655	-	705	655	-	-	-	-	-	-	-
Stage 1	850	767	-	917	820	-	-	-	-	-	-	-
Stage 2	902	820	-	841	767	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	9.4	0	0.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1453	-	-	917	829	1505	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.02	0.006	-	-
HCM Control Delay (s)	0	-	-	8.9	9.4	7.4	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	2	0	0	0	0	1	0	1	0	0	0
Future Vol, veh/h	1	2	0	0	0	0	1	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	63	63	63	63	63	63	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	3	0	0	0	0	2	0	2	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2	0	0	3	0	0	9	9	3	10	9	2
Stage 1	-	-	-	-	-	-	7	7	-	2	2	-
Stage 2	-	-	-	-	-	-	2	2	-	8	7	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1620	-	-	1619	-	-	1010	886	1081	1008	886	1082
Stage 1	-	-	-	-	-	-	1015	890	-	1021	894	-
Stage 2	-	-	-	-	-	-	1021	894	-	1013	890	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1620	-	-	1619	-	-	1009	885	1081	1006	885	1082
Mov Cap-2 Maneuver	-	-	-	-	-	-	1009	885	-	1006	885	-
Stage 1	-	-	-	-	-	-	1014	889	-	1020	894	-
Stage 2	-	-	-	-	-	-	1021	894	-	1011	889	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0	8.5	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1044	1620	-	-	1619	-	-	-
HCM Lane V/C Ratio	0.003	0.001	-	-	-	-	-	-
HCM Control Delay (s)	8.5	7.2	0	-	0	-	-	0
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	52	1	0	35	8	4	6	0	5	4	7
Future Vol, veh/h	7	52	1	0	35	8	4	6	0	5	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	64	1	0	43	10	5	7	0	6	5	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	53	0	0	65	0	0	138	136	65	134	131	48
Stage 1	-	-	-	-	-	-	83	83	-	48	48	-
Stage 2	-	-	-	-	-	-	55	53	-	86	83	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1553	-	-	1537	-	-	833	755	999	838	760	1021
Stage 1	-	-	-	-	-	-	925	826	-	965	855	-
Stage 2	-	-	-	-	-	-	957	851	-	922	826	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1553	-	-	1537	-	-	818	750	999	828	755	1021
Mov Cap-2 Maneuver	-	-	-	-	-	-	818	750	-	828	755	-
Stage 1	-	-	-	-	-	-	919	821	-	959	855	-
Stage 2	-	-	-	-	-	-	943	851	-	908	821	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	9.7	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	776	1553	-	-	1537	-	-	879
HCM Lane V/C Ratio	0.016	0.006	-	-	-	-	-	0.022
HCM Control Delay (s)	9.7	7.3	0	-	0	-	-	9.2
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	9	2	0	4
Future Vol, veh/h	1	0	9	2	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	13	3	0	6

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	21	15	0	0	16	0
Stage 1	15	-	-	-	-	-
Stage 2	6	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	996	1065	-	-	1602	-
Stage 1	1008	-	-	-	-	-
Stage 2	1017	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	996	1065	-	-	1602	-
Mov Cap-2 Maneuver	996	-	-	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	1017	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	996	1602	-
HCM Lane V/C Ratio	-	-	0.001	-	-
HCM Control Delay (s)	-	-	8.6	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	1	0	0	0	0	0	38	0	0	48	0
Future Vol, veh/h	0	1	0	0	0	0	0	38	0	0	48	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	0	0	0	0	0	44	0	0	55	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	99	99	55	100	99	44	55	0	0	44	0	0
Stage 1	55	55	-	44	44	-	-	-	-	-	-	-
Stage 2	44	44	-	56	55	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	883	791	1012	881	791	1026	1550	-	-	1564	-	-
Stage 1	957	849	-	970	858	-	-	-	-	-	-	-
Stage 2	970	858	-	956	849	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	883	791	1012	880	791	1026	1550	-	-	1564	-	-
Mov Cap-2 Maneuver	883	791	-	880	791	-	-	-	-	-	-	-
Stage 1	957	849	-	970	858	-	-	-	-	-	-	-
Stage 2	970	858	-	955	849	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1550	-	-	791	-	1564	-	-
HCM Lane V/C Ratio	-	-	-	0.001	-	-	-	-
HCM Control Delay (s)	0	-	-	9.6	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	1	0	0	1	0	0	0	1	0	0	0
Future Vol, veh/h	0	1	0	0	1	0	0	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	0	0	1	0	0	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	1	0	0	2	2	1	3	2	1
Stage 1	-	-	-	-	-	-	1	1	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	2	1	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1084	1019	894	1084
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1021	895	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1084	1018	894	1084
Mov Cap-2 Maneuver	-	-	-	-	-	-	1020	894	-	1018	894	-
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1020	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	8.3	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1084	1622	-	-	1622	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-	-	-	-
HCM Control Delay (s)	8.3	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	1	0	1	0	3	1	4	0	1	8	0
Future Vol, veh/h	0	1	0	1	0	3	1	4	0	1	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	0	1	0	3	1	4	0	1	8	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	18	16	8	17	16	4	8	0	0	4	0	0
Stage 1	10	10	-	6	6	-	-	-	-	-	-	-
Stage 2	8	6	-	11	10	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	996	878	1074	998	878	1080	1612	-	-	1618	-	-
Stage 1	1011	887	-	1016	891	-	-	-	-	-	-	-
Stage 2	1013	891	-	1010	887	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	992	876	1074	996	876	1080	1612	-	-	1618	-	-
Mov Cap-2 Maneuver	992	876	-	996	876	-	-	-	-	-	-	-
Stage 1	1010	886	-	1015	890	-	-	-	-	-	-	-
Stage 2	1009	890	-	1008	886	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	8.4	1.4	0.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1612	-	-	876	1058	1618	-	-
HCM Lane V/C Ratio	0.001	-	-	0.001	0.004	0.001	-	-
HCM Control Delay (s)	7.2	0	-	9.1	8.4	7.2	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	3	0	1	3	0	0	0	0	0	0	0
Future Vol, veh/h	0	3	0	1	3	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	0	1	3	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	3	0	0	3	0	0	8	8	3	8	8	3
Stage 1	-	-	-	-	-	-	3	3	-	5	5	-
Stage 2	-	-	-	-	-	-	5	5	-	3	3	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1619	-	-	1619	-	-	1011	887	1081	1011	887	1081
Stage 1	-	-	-	-	-	-	1020	893	-	1017	892	-
Stage 2	-	-	-	-	-	-	1017	892	-	1020	893	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1619	-	-	1619	-	-	1010	886	1081	1010	886	1081
Mov Cap-2 Maneuver	-	-	-	-	-	-	1010	886	-	1010	886	-
Stage 1	-	-	-	-	-	-	1020	893	-	1017	891	-
Stage 2	-	-	-	-	-	-	1016	891	-	1020	893	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.8	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1619	-	-	1619	-	-	-
HCM Lane V/C Ratio	-	-	-	-	0.001	-	-	-
HCM Control Delay (s)	0	0	-	-	7.2	0	-	0
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	11	1	4	1	19	8	3	0	9	1
Future Vol, veh/h	2	1	11	1	4	1	19	8	3	0	9	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1	15	1	6	1	27	11	4	0	13	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	83	79	14	87	79	11	14	0	-	11	0	0
Stage 1	14	14	-	65	65	-	-	-	-	-	-	-
Stage 2	69	65	-	22	14	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	904	811	1066	899	811	1070	1604	-	0	1608	-	-
Stage 1	1006	884	-	946	841	-	-	-	0	-	-	-
Stage 2	941	841	-	996	884	-	-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	886	797	1066	873	797	1070	1604	-	-	1608	-	-
Mov Cap-2 Maneuver	886	797	-	873	797	-	-	-	-	-	-	-
Stage 1	989	884	-	930	827	-	-	-	-	-	-	-
Stage 2	917	827	-	980	884	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	9.3	5.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	1012	845	1608	-	-
HCM Lane V/C Ratio	0.017	-	0.019	0.01	-	-	-
HCM Control Delay (s)	7.3	0	8.6	9.3	0	-	-
HCM Lane LOS	A	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	1	0	0	0	0	34	0	0	60	1
Future Vol, veh/h	0	0	1	0	0	0	0	34	0	0	60	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	0	0	0	0	41	0	0	72	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	114	114	73	114	114	41	73	0	0	41	0	0
Stage 1	73	73	-	41	41	-	-	-	-	-	-	-
Stage 2	41	41	-	73	73	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	863	776	989	863	776	1030	1527	-	-	1568	-	-
Stage 1	937	834	-	974	861	-	-	-	-	-	-	-
Stage 2	974	861	-	937	834	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	863	776	989	862	776	1030	1527	-	-	1568	-	-
Mov Cap-2 Maneuver	863	776	-	862	776	-	-	-	-	-	-	-
Stage 1	937	834	-	974	861	-	-	-	-	-	-	-
Stage 2	974	861	-	936	834	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1527	-	-	989	-	1568	-	-
HCM Lane V/C Ratio	-	-	-	0.001	-	-	-	-
HCM Control Delay (s)	0	-	-	8.6	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑			↰			↑	↱
Traffic Vol, veh/h	0	0	0	16	0	4	19	94	0	0	78	43
Future Vol, veh/h	0	0	0	16	0	4	19	94	0	0	78	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	22	0	5	26	129	0	0	107	59

Major/Minor	Minor1			Major1				Major2		
Conflicting Flow All	288	288	129	107	0	-	-	-	0	
Stage 1	181	181	-	-	-	-	-	-	-	
Stage 2	107	107	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	702	622	921	1484	-	0	0	-	0	
Stage 1	850	750	-	-	-	0	0	-	0	
Stage 2	917	807	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	689	0	921	1484	-	-	-	-	-	
Mov Cap-2 Maneuver	689	0	-	-	-	-	-	-	-	
Stage 1	834	0	-	-	-	-	-	-	-	
Stage 2	917	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	8.9	1.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT
Capacity (veh/h)	1484	-	921	-
HCM Lane V/C Ratio	0.018	-	0.006	-
HCM Control Delay (s)	7.5	0	8.9	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑						↑↑	↗		↱	
Traffic Vol, veh/h	65	1	59	0	0	0	0	109	6	0	91	0
Future Vol, veh/h	65	1	59	0	0	0	0	109	6	0	91	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	1	72	0	0	0	0	133	7	0	111	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	178	251	111	-	0	0	140	0	0
Stage 1	111	111	-	-	-	-	-	-	-
Stage 2	67	140	-	-	-	-	-	-	-
Critical Hdwy	6.63	6.53	6.23	-	-	-	4.13	-	-
Critical Hdwy Stg 1	5.43	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	-	-	-	2.219	-	-
Pot Cap-1 Maneuver	803	651	942	0	-	-	1442	-	0
Stage 1	913	803	-	0	-	-	-	-	0
Stage 2	948	780	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	803	0	942	-	-	-	1442	-	-
Mov Cap-2 Maneuver	803	0	-	-	-	-	-	-	-
Stage 1	913	0	-	-	-	-	-	-	-
Stage 2	948	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	942	1442	-
HCM Lane V/C Ratio	-	-	0.078	-	-
HCM Control Delay (s)	-	-	9.1	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	1	0	5	19	27	0	0	16	4
Future Vol, veh/h	0	0	0	1	0	5	19	27	0	0	16	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	1	0	6	24	35	0	0	21	5

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	107	-	35	26	0	-	-	-	0	
Stage 1	83	-	-	-	-	-	-	-	-	
Stage 2	24	-	-	-	-	-	-	-	-	
Critical Hdwy	6.42	-	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	-	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	891	0	1038	1588	-	0	0	-	-	
Stage 1	940	0	-	-	-	0	0	-	-	
Stage 2	999	0	-	-	-	0	0	-	-	
Platoon blocked, %					-			-	-	
Mov Cap-1 Maneuver	878	0	1038	1588	-	-	-	-	-	
Mov Cap-2 Maneuver	878	0	-	-	-	-	-	-	-	
Stage 1	926	0	-	-	-	-	-	-	-	
Stage 2	999	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	8.6	3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1588	-	878	1038	-	-
HCM Lane V/C Ratio	0.015	-	0.001	0.006	-	-
HCM Control Delay (s)	7.3	0	9.1	8.5	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	1	2	0	0	0	0	41	4	0	15	0
Future Vol, veh/h	4	1	2	0	0	0	0	41	4	0	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1	2	0	0	0	0	44	4	0	16	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	62	64	16	-	0	0	48	0	0
Stage 1	16	16	-	-	-	-	-	-	-
Stage 2	46	48	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	944	827	1063	0	-	-	1559	-	0
Stage 1	1007	882	-	0	-	-	-	-	0
Stage 2	976	855	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	944	0	1063	-	-	-	1559	-	-
Mov Cap-2 Maneuver	944	0	-	-	-	-	-	-	-
Stage 1	1007	0	-	-	-	-	-	-	-
Stage 2	976	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	944	1063	1559	-
HCM Lane V/C Ratio	-	-	0.005	0.002	-	-
HCM Control Delay (s)	-	-	8.8	8.4	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	0	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	3	0	38	1	5	0	0	49	6
Future Vol, veh/h	0	0	0	3	0	38	1	5	0	0	49	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	0	45	1	6	0	0	58	7

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	70	73	6	65	0	-	-	-	0
Stage 1	8	8	-	-	-	-	-	-	-
Stage 2	62	65	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	934	817	1077	1537	-	0	0	-	-
Stage 1	1015	889	-	-	-	0	0	-	-
Stage 2	961	841	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	933	0	1077	1537	-	-	-	-	-
Mov Cap-2 Maneuver	933	0	-	-	-	-	-	-	-
Stage 1	1014	0	-	-	-	-	-	-	-
Stage 2	961	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1537	-	933	1077	-	-
HCM Lane V/C Ratio	0.001	-	0.004	0.042	-	-
HCM Control Delay (s)	7.3	0	8.9	8.5	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	0.1	-	-

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱					↳			↰	
Traffic Vol, veh/h	3	1	0	0	0	0	0	4	3	52	5	0
Future Vol, veh/h	3	1	0	0	0	0	0	4	3	52	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1	0	0	0	0	0	4	3	55	5	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	121	122	5	-	0	0	7	0	0
Stage 1	115	115	-	-	-	-	-	-	-
Stage 2	6	7	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	874	768	1078	0	-	-	1614	-	0
Stage 1	910	800	-	0	-	-	-	-	0
Stage 2	1017	890	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	844	0	1078	-	-	-	1614	-	-
Mov Cap-2 Maneuver	844	0	-	-	-	-	-	-	-
Stage 1	910	0	-	-	-	-	-	-	-
Stage 2	982	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0	6.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	844	-	1614	-
HCM Lane V/C Ratio	-	-	0.005	-	0.034	-
HCM Control Delay (s)	-	-	9.3	0	7.3	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	0	-	0.1	-

APPENDIX C: SYNCHRO REPORT OF EXISTING PLUS PROJECT CONSTRUCTION CONDITIONS

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	3	0	7	0	8	2	103	7	31	82	0
Future Vol, veh/h	0	3	0	7	0	8	2	103	7	31	82	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	0	8	0	9	2	112	8	34	89	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	282	281	89	279	277	116	89	0	0	120	0	0
Stage 1	157	157	-	120	120	-	-	-	-	-	-	-
Stage 2	125	124	-	159	157	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	670	627	969	673	631	936	1506	-	-	1468	-	-
Stage 1	845	768	-	884	796	-	-	-	-	-	-	-
Stage 2	879	793	-	843	768	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	651	611	969	658	615	936	1506	-	-	1468	-	-
Mov Cap-2 Maneuver	651	611	-	658	615	-	-	-	-	-	-	-
Stage 1	844	750	-	883	795	-	-	-	-	-	-	-
Stage 2	870	792	-	819	750	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	9.7	0.1	2.1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1506	-	-	611	782	1468	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.021	0.023	-	-
HCM Control Delay (s)	7.4	0	-	10.9	9.7	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	1	18	0	2	0	0	0	0	1	0	0
Future Vol, veh/h	0	1	18	0	2	0	0	0	0	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	50	50	50	50	50	50	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	36	0	4	0	0	0	0	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	4	0	0	38	0	0	24	24	20	24	42	4
Stage 1	-	-	-	-	-	-	20	20	-	4	4	-
Stage 2	-	-	-	-	-	-	4	4	-	20	38	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1618	-	-	1572	-	-	987	869	1058	987	850	1080
Stage 1	-	-	-	-	-	-	999	879	-	1018	892	-
Stage 2	-	-	-	-	-	-	1018	892	-	999	863	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1618	-	-	1572	-	-	987	869	1058	987	850	1080
Mov Cap-2 Maneuver	-	-	-	-	-	-	987	869	-	987	850	-
Stage 1	-	-	-	-	-	-	999	879	-	1018	892	-
Stage 2	-	-	-	-	-	-	1018	892	-	999	863	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	8.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1618	-	-	1572	-	-	987
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.002
HCM Control Delay (s)	0	0	-	-	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	71	2	2	41	7	7	8	2	11	20	2
Future Vol, veh/h	2	71	2	2	41	7	7	8	2	11	20	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	96	3	3	55	9	9	11	3	15	27	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	99	0	0	185	174	98	177	171	60
Stage 1	-	-	-	-	-	-	104	104	-	66	66	-
Stage 2	-	-	-	-	-	-	81	70	-	111	105	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1538	-	-	1494	-	-	776	719	958	785	722	1005
Stage 1	-	-	-	-	-	-	902	809	-	945	840	-
Stage 2	-	-	-	-	-	-	927	837	-	894	808	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1538	-	-	1494	-	-	750	716	958	772	719	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	750	716	-	772	719	-
Stage 1	-	-	-	-	-	-	900	807	-	943	838	-
Stage 2	-	-	-	-	-	-	893	835	-	878	806	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	9.9	10.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	752	1538	-	-	1494	-	-	749
HCM Lane V/C Ratio	0.031	0.002	-	-	0.002	-	-	0.06
HCM Control Delay (s)	9.9	7.3	0	-	7.4	0	-	10.1
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	1	14	39	11	10
Future Vol, veh/h	4	1	14	39	11	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	1	18	51	14	13

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	85	44	0	0	69	0
Stage 1	44	-	-	-	-	-
Stage 2	41	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	916	1026	-	-	1532	-
Stage 1	978	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	908	1026	-	-	1532	-
Mov Cap-2 Maneuver	908	-	-	-	-	-
Stage 1	978	-	-	-	-	-
Stage 2	972	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	3.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	929	1532	-
HCM Lane V/C Ratio	-	-	0.007	0.009	-
HCM Control Delay (s)	-	-	8.9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	46	1	0	0	0	1	46	0	37	42	0
Future Vol, veh/h	0	46	1	0	0	0	1	46	0	37	42	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	54	1	0	0	0	1	54	0	44	49	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	193	193	49	221	193	54	49	0	0	54	0	0
Stage 1	137	137	-	56	56	-	-	-	-	-	-	-
Stage 2	56	56	-	165	137	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	767	702	1020	735	702	1013	1558	-	-	1551	-	-
Stage 1	866	783	-	956	848	-	-	-	-	-	-	-
Stage 2	956	848	-	837	783	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	749	681	1020	674	681	1013	1558	-	-	1551	-	-
Mov Cap-2 Maneuver	749	681	-	674	681	-	-	-	-	-	-	-
Stage 1	865	760	-	955	847	-	-	-	-	-	-	-
Stage 2	955	847	-	754	760	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	0	0.2	3.5
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1558	-	-	686	-	1551	-	-
HCM Lane V/C Ratio	0.001	-	-	0.081	-	0.028	-	-
HCM Control Delay (s)	7.3	0	-	10.7	0	7.4	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	83	0	1	1	0	0	0	1	0	0	0
Future Vol, veh/h	1	83	0	1	1	0	0	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	50	50	50	50	50	50	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	166	0	2	2	0	0	0	2	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2	0	0	166	0	0	176	176	166	177	176	2
Stage 1	-	-	-	-	-	-	170	170	-	6	6	-
Stage 2	-	-	-	-	-	-	6	6	-	171	170	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1620	-	-	1412	-	-	786	717	878	785	717	1082
Stage 1	-	-	-	-	-	-	832	758	-	1016	891	-
Stage 2	-	-	-	-	-	-	1016	891	-	831	758	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1620	-	-	1412	-	-	784	716	878	782	716	1082
Mov Cap-2 Maneuver	-	-	-	-	-	-	784	716	-	782	716	-
Stage 1	-	-	-	-	-	-	831	757	-	1015	890	-
Stage 2	-	-	-	-	-	-	1015	890	-	828	757	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	3.8	9.1	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	878	1620	-	-	1412	-	-	-
HCM Lane V/C Ratio	0.002	0.001	-	-	0.001	-	-	-
HCM Control Delay (s)	9.1	7.2	0	-	7.6	0	-	0
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	82	0	1	0	0	0	16	85	1	10	1
Future Vol, veh/h	1	82	0	1	0	0	0	16	85	1	10	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	63	63	63	63	63	63	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	130	0	2	0	0	0	25	135	2	16	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	114	181	17	179	115	93	18	0	0	160	0	0
Stage 1	21	21	-	93	93	-	-	-	-	-	-	-
Stage 2	93	160	-	86	22	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	863	713	1062	783	775	964	1599	-	-	1419	-	-
Stage 1	998	878	-	914	818	-	-	-	-	-	-	-
Stage 2	914	766	-	922	877	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	862	712	1062	673	774	964	1599	-	-	1419	-	-
Mov Cap-2 Maneuver	862	712	-	673	774	-	-	-	-	-	-	-
Stage 1	998	877	-	914	818	-	-	-	-	-	-	-
Stage 2	914	766	-	784	876	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	10.4	0	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1599	-	-	713	673	1419	-	-
HCM Lane V/C Ratio	-	-	-	0.185	0.002	0.001	-	-
HCM Control Delay (s)	0	-	-	11.2	10.4	7.5	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	167	0	0	2	0	0	0	0	18	0	0
Future Vol, veh/h	0	167	0	0	2	0	0	0	0	18	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	58	58	58	58	58	58	58	58	58
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	288	0	0	3	0	0	0	0	31	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	3	0	0	288	0	0	291	291	288	291	291	3
Stage 1	-	-	-	-	-	-	288	288	-	3	3	-
Stage 2	-	-	-	-	-	-	3	3	-	288	288	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1619	-	-	1274	-	-	661	619	751	661	619	1081
Stage 1	-	-	-	-	-	-	720	674	-	1020	893	-
Stage 2	-	-	-	-	-	-	1020	893	-	720	674	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1619	-	-	1274	-	-	661	619	751	661	619	1081
Mov Cap-2 Maneuver	-	-	-	-	-	-	661	619	-	661	619	-
Stage 1	-	-	-	-	-	-	720	674	-	1020	893	-
Stage 2	-	-	-	-	-	-	1020	893	-	720	674	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	10.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1619	-	-	1274	-	-	661
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.047
HCM Control Delay (s)	0	0	-	-	0	-	-	10.7
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	2	14	1	4	1	14	51	84	1	16	1
Future Vol, veh/h	1	2	14	1	4	1	14	51	84	1	16	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	17	1	5	1	17	61	101	1	19	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	120	117	20	126	117	61	20	0	-	61	0	0
Stage 1	22	22	-	95	95	-	-	-	-	-	-	-
Stage 2	98	95	-	31	22	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	855	773	1058	848	773	1004	1596	-	0	1542	-	-
Stage 1	996	877	-	912	816	-	-	-	0	-	-	-
Stage 2	908	816	-	986	877	-	-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	842	764	1058	825	764	1004	1596	-	-	1542	-	-
Mov Cap-2 Maneuver	842	764	-	825	764	-	-	-	-	-	-	-
Stage 1	985	876	-	902	807	-	-	-	-	-	-	-
Stage 2	892	807	-	967	876	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	9.5	1.6	0.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1596	-	998	806	1542	-	-
HCM Lane V/C Ratio	0.011	-	0.021	0.009	0.001	-	-
HCM Control Delay (s)	7.3	0	8.7	9.5	7.3	0	-
HCM Lane LOS	A	A	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	0	0	0	0	0	1	50	0	0	34	0
Future Vol, veh/h	1	0	0	0	0	0	1	50	0	0	34	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	0	0	0	1	63	0	0	43	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	108	108	43	108	108	63	43	0	0	63	0	0
Stage 1	43	43	-	65	65	-	-	-	-	-	-	-
Stage 2	65	65	-	43	43	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	871	782	1027	871	782	1002	1566	-	-	1540	-	-
Stage 1	971	859	-	946	841	-	-	-	-	-	-	-
Stage 2	946	841	-	971	859	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	870	781	1027	870	781	1002	1566	-	-	1540	-	-
Mov Cap-2 Maneuver	870	781	-	870	781	-	-	-	-	-	-	-
Stage 1	970	859	-	945	840	-	-	-	-	-	-	-
Stage 2	945	840	-	971	859	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	0.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1566	-	-	870	-	1540	-	-
HCM Lane V/C Ratio	0.001	-	-	0.001	-	-	-	-
HCM Control Delay (s)	7.3	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑			↱			↑	↱
Traffic Vol, veh/h	0	0	0	6	0	4	22	121	0	0	71	55
Future Vol, veh/h	0	0	0	6	0	4	22	121	0	0	71	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	7	0	4	24	134	0	0	79	61

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	261	261	134	79	0	-	-	-	0
Stage 1	182	182	-	-	-	-	-	-	-
Stage 2	79	79	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	728	644	915	1519	-	0	0	-	0
Stage 1	849	749	-	-	-	0	0	-	0
Stage 2	944	829	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	716	0	915	1519	-	-	-	-	-
Mov Cap-2 Maneuver	716	0	-	-	-	-	-	-	-
Stage 1	835	0	-	-	-	-	-	-	-
Stage 2	944	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT
Capacity (veh/h)	1519	-	915	-
HCM Lane V/C Ratio	0.016	-	0.005	-
HCM Control Delay (s)	7.4	0	9	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	0	-	0	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑						↑↑	↱		↑	
Traffic Vol, veh/h	38	0	128	0	0	0	0	217	13	2	63	0
Future Vol, veh/h	38	0	128	0	0	0	0	217	13	2	63	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	0	135	0	0	0	0	228	14	2	66	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	184	312	66	-	0	0	242	0	0
Stage 1	70	70	-	-	-	-	-	-	-
Stage 2	114	242	-	-	-	-	-	-	-
Critical Hdwy	6.63	6.53	6.23	-	-	-	4.13	-	-
Critical Hdwy Stg 1	5.43	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	-	-	-	2.219	-	-
Pot Cap-1 Maneuver	797	602	997	0	-	-	1323	-	0
Stage 1	952	836	-	0	-	-	-	-	0
Stage 2	899	705	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	795	0	997	-	-	-	1323	-	-
Mov Cap-2 Maneuver	795	0	-	-	-	-	-	-	-
Stage 1	952	0	-	-	-	-	-	-	-
Stage 2	897	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	997	1323	-
HCM Lane V/C Ratio	-	-	0.135	0.002	-
HCM Control Delay (s)	-	-	9.2	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	3	1	3	8	146	0	0	30	1
Future Vol, veh/h	0	0	0	3	1	3	8	146	0	0	30	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	1	4	10	178	0	0	37	1

Major/Minor	Minor1			Major1				Major2		
Conflicting Flow All	236	236	178	38	0	-	-	-	0	
Stage 1	198	198	-	-	-	-	-	-	-	
Stage 2	38	38	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	752	665	865	1572	-	0	0	-	-	
Stage 1	835	737	-	-	-	0	0	-	-	
Stage 2	984	863	-	-	-	0	0	-	-	
Platoon blocked, %					-			-	-	
Mov Cap-1 Maneuver	747	0	865	1572	-	-	-	-	-	
Mov Cap-2 Maneuver	747	0	-	-	-	-	-	-	-	
Stage 1	829	0	-	-	-	-	-	-	-	
Stage 2	984	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1572	-	747	865	-	-
HCM Lane V/C Ratio	0.006	-	0.005	0.004	-	-
HCM Control Delay (s)	7.3	0	9.8	9.2	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	0	-	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	121	0	14	0	0	0	0	35	2	2	30	0
Future Vol, veh/h	121	0	14	0	0	0	0	35	2	2	30	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	155	0	18	0	0	0	0	45	3	3	38	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	91	-	38	-	0	0	48	0	0
Stage 1	44	-	-	-	-	-	-	-	-
Stage 2	47	-	-	-	-	-	-	-	-
Critical Hdwy	6.42	-	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	-	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	909	0	1034	0	-	-	1559	-	0
Stage 1	978	0	-	0	-	-	-	-	0
Stage 2	975	0	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	907	0	1034	-	-	-	1559	-	-
Mov Cap-2 Maneuver	907	0	-	-	-	-	-	-	-
Stage 1	978	0	-	-	-	-	-	-	-
Stage 2	973	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	907	1034	1559	-
HCM Lane V/C Ratio	-	-	0.171	0.017	0.002	-
HCM Control Delay (s)	-	-	9.8	8.5	7.3	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	0	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	46	1	5	0	0	27	5
Future Vol, veh/h	0	0	0	0	0	46	1	5	0	0	27	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	57	1	6	0	0	33	6

Major/Minor	Minor1		Major1			Major2			
Conflicting Flow All	44	47	6	39	0	-	-	-	0
Stage 1	8	8	-	-	-	-	-	-	-
Stage 2	36	39	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	967	845	1077	1571	-	0	0	-	-
Stage 1	1015	889	-	-	-	0	0	-	-
Stage 2	986	862	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	966	0	1077	1571	-	-	-	-	-
Mov Cap-2 Maneuver	966	0	-	-	-	-	-	-	-
Stage 1	1014	0	-	-	-	-	-	-	-
Stage 2	986	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1571	-	-	1077	-	-
HCM Lane V/C Ratio	0.001	-	-	0.053	-	-
HCM Control Delay (s)	7.3	0	0	8.5	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1	1	0	0	0	0	6	1	28	4	0
Future Vol, veh/h	3	1	1	0	0	0	0	6	1	28	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1	1	0	0	0	0	7	1	30	4	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	72	72	4	-	0	0	8	0	0
Stage 1	64	64	-	-	-	-	-	-	-
Stage 2	8	8	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	932	818	1080	0	-	-	1612	-	0
Stage 1	959	842	-	0	-	-	-	-	0
Stage 2	1015	889	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	914	0	1080	-	-	-	1612	-	-
Mov Cap-2 Maneuver	914	0	-	-	-	-	-	-	-
Stage 1	959	0	-	-	-	-	-	-	-
Stage 2	996	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0	6.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	914	1080	1612	-
HCM Lane V/C Ratio	-	-	0.005	0.001	0.019	-
HCM Control Delay (s)	-	-	9	8.3	7.3	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	5	28	8	0	75	1	8	110	1
Future Vol, veh/h	0	0	2	5	28	8	0	75	1	8	110	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	2	6	33	10	0	89	1	10	131	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	263	242	132	243	242	90	132	0	0	90	0	0
Stage 1	152	152	-	90	90	-	-	-	-	-	-	-
Stage 2	111	90	-	153	152	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	690	660	917	711	660	968	1453	-	-	1505	-	-
Stage 1	850	772	-	917	820	-	-	-	-	-	-	-
Stage 2	894	820	-	849	772	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	653	655	917	705	655	968	1453	-	-	1505	-	-
Mov Cap-2 Maneuver	653	655	-	705	655	-	-	-	-	-	-	-
Stage 1	850	767	-	917	820	-	-	-	-	-	-	-
Stage 2	849	820	-	841	767	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	10.5	0	0.5
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1453	-	-	917	706	1505	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.069	0.006	-	-
HCM Control Delay (s)	0	-	-	8.9	10.5	7.4	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	0	0	0	0	19	0	1	0	0	0
Future Vol, veh/h	1	2	0	0	0	0	19	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	63	63	63	63	63	63	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	3	0	0	0	0	30	0	2	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2	0	0	3	0	0	9	9	3	10	9	2
Stage 1	-	-	-	-	-	-	7	7	-	2	2	-
Stage 2	-	-	-	-	-	-	2	2	-	8	7	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1620	-	-	1619	-	-	1010	886	1081	1008	886	1082
Stage 1	-	-	-	-	-	-	1015	890	-	1021	894	-
Stage 2	-	-	-	-	-	-	1021	894	-	1013	890	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1620	-	-	1619	-	-	1009	885	1081	1006	885	1082
Mov Cap-2 Maneuver	-	-	-	-	-	-	1009	885	-	1006	885	-
Stage 1	-	-	-	-	-	-	1014	889	-	1020	894	-
Stage 2	-	-	-	-	-	-	1021	894	-	1011	889	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0	8.7	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1012	1620	-	-	1619	-	-	-
HCM Lane V/C Ratio	0.031	0.001	-	-	-	-	-	-
HCM Control Delay (s)	8.7	7.2	0	-	0	-	-	0
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	52	1	0	71	8	4	15	0	5	4	7
Future Vol, veh/h	7	52	1	0	71	8	4	15	0	5	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	64	1	0	88	10	5	19	0	6	5	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	98	0	0	65	0	0	183	181	65	185	176	93
Stage 1	-	-	-	-	-	-	83	83	-	93	93	-
Stage 2	-	-	-	-	-	-	100	98	-	92	83	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1495	-	-	1537	-	-	778	713	999	776	717	964
Stage 1	-	-	-	-	-	-	925	826	-	914	818	-
Stage 2	-	-	-	-	-	-	906	814	-	915	826	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1495	-	-	1537	-	-	763	709	999	757	713	964
Mov Cap-2 Maneuver	-	-	-	-	-	-	763	709	-	757	713	-
Stage 1	-	-	-	-	-	-	919	821	-	909	818	-
Stage 2	-	-	-	-	-	-	892	814	-	889	821	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	10.2	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	720	1495	-	-	1537	-	-	822
HCM Lane V/C Ratio	0.033	0.006	-	-	-	-	-	0.024
HCM Control Delay (s)	10.2	7.4	0	-	0	-	-	9.5
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	9	9	2	0	4
Future Vol, veh/h	1	9	9	2	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	13	13	3	0	6

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	21	15	0	0	16	0
Stage 1	15	-	-	-	-	-
Stage 2	6	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	996	1065	-	-	1602	-
Stage 1	1008	-	-	-	-	-
Stage 2	1017	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	996	1065	-	-	1602	-
Mov Cap-2 Maneuver	996	-	-	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	1017	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1058	1602	-
HCM Lane V/C Ratio	-	-	0.014	-	-
HCM Control Delay (s)	-	-	8.5	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	1	0	0	9	36	0	38	0	0	48	0
Future Vol, veh/h	0	1	0	0	9	36	0	38	0	0	48	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	0	0	10	41	0	44	0	0	55	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	125	99	55	100	99	44	55	0	0	44	0	0
Stage 1	55	55	-	44	44	-	-	-	-	-	-	-
Stage 2	70	44	-	56	55	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	849	791	1012	881	791	1026	1550	-	-	1564	-	-
Stage 1	957	849	-	970	858	-	-	-	-	-	-	-
Stage 2	940	858	-	956	849	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	807	791	1012	880	791	1026	1550	-	-	1564	-	-
Mov Cap-2 Maneuver	807	791	-	880	791	-	-	-	-	-	-	-
Stage 1	957	849	-	970	858	-	-	-	-	-	-	-
Stage 2	891	858	-	955	849	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	8.9	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1550	-	-	791	968	1564	-	-
HCM Lane V/C Ratio	-	-	-	0.001	0.053	-	-	-
HCM Control Delay (s)	0	-	-	9.6	8.9	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	1	0	0	46	0	0	0	1	0	0	0
Future Vol, veh/h	0	1	0	0	46	0	0	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	0	0	61	0	0	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	61	0	0	1	0	0	62	62	1	63	62	61
Stage 1	-	-	-	-	-	-	1	1	-	61	61	-
Stage 2	-	-	-	-	-	-	61	61	-	2	1	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1542	-	-	1622	-	-	933	829	1084	932	829	1004
Stage 1	-	-	-	-	-	-	1022	895	-	950	844	-
Stage 2	-	-	-	-	-	-	950	844	-	1021	895	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1542	-	-	1622	-	-	933	829	1084	931	829	1004
Mov Cap-2 Maneuver	-	-	-	-	-	-	933	829	-	931	829	-
Stage 1	-	-	-	-	-	-	1022	895	-	950	844	-
Stage 2	-	-	-	-	-	-	950	844	-	1020	895	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	8.3	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1084	1542	-	-	1622	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-	-	-	-
HCM Control Delay (s)	8.3	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	1	0	118	45	3	1	4	0	1	8	0
Future Vol, veh/h	0	1	0	118	45	3	1	4	0	1	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	0	124	47	3	1	4	0	1	8	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	41	16	8	17	16	4	8	0	0	4	0	0
Stage 1	10	10	-	6	6	-	-	-	-	-	-	-
Stage 2	31	6	-	11	10	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	963	878	1074	998	878	1080	1612	-	-	1618	-	-
Stage 1	1011	887	-	1016	891	-	-	-	-	-	-	-
Stage 2	986	891	-	1010	887	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	919	876	1074	996	876	1080	1612	-	-	1618	-	-
Mov Cap-2 Maneuver	919	876	-	996	876	-	-	-	-	-	-	-
Stage 1	1010	886	-	1015	890	-	-	-	-	-	-	-
Stage 2	930	890	-	1008	886	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.6	1.4	0.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1612	-	-	876	962	1618	-	-
HCM Lane V/C Ratio	0.001	-	-	0.001	0.182	0.001	-	-
HCM Control Delay (s)	7.2	0	-	9.1	9.6	7.2	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.7	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	3	0	1	165	18	0	0	0	0	0	0
Future Vol, veh/h	0	3	0	1	165	18	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	0	1	188	20	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	208	0	0	3	0	0	203	213	3	203	203	198
Stage 1	-	-	-	-	-	-	3	3	-	200	200	-
Stage 2	-	-	-	-	-	-	200	210	-	3	3	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1363	-	-	1619	-	-	755	684	1081	755	693	843
Stage 1	-	-	-	-	-	-	1020	893	-	802	736	-
Stage 2	-	-	-	-	-	-	802	728	-	1020	893	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1363	-	-	1619	-	-	754	683	1081	754	692	843
Mov Cap-2 Maneuver	-	-	-	-	-	-	754	683	-	754	692	-
Stage 1	-	-	-	-	-	-	1020	893	-	802	735	-
Stage 2	-	-	-	-	-	-	801	727	-	1020	893	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1363	-	-	1619	-	-	-
HCM Lane V/C Ratio	-	-	-	-	0.001	-	-	-
HCM Control Delay (s)	0	0	-	-	7.2	0	-	0
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	11	1	4	1	19	8	3	0	9	1
Future Vol, veh/h	2	1	11	1	4	1	19	8	3	0	9	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1	15	1	6	1	27	11	4	0	13	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	83	79	14	87	79	11	14	0	-	11	0	0
Stage 1	14	14	-	65	65	-	-	-	-	-	-	-
Stage 2	69	65	-	22	14	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	904	811	1066	899	811	1070	1604	-	0	1608	-	-
Stage 1	1006	884	-	946	841	-	-	-	0	-	-	-
Stage 2	941	841	-	996	884	-	-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	886	797	1066	873	797	1070	1604	-	-	1608	-	-
Mov Cap-2 Maneuver	886	797	-	873	797	-	-	-	-	-	-	-
Stage 1	989	884	-	930	827	-	-	-	-	-	-	-
Stage 2	917	827	-	980	884	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	9.3	5.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	1012	845	1608	-	-
HCM Lane V/C Ratio	0.017	-	0.019	0.01	-	-	-
HCM Control Delay (s)	7.3	0	8.6	9.3	0	-	-
HCM Lane LOS	A	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	1	0	0	0	0	34	0	0	177	1
Future Vol, veh/h	0	0	1	0	0	0	0	34	0	0	177	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	0	0	0	0	41	0	0	213	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	255	255	214	255	255	41	214	0	0	41	0	0
Stage 1	214	214	-	41	41	-	-	-	-	-	-	-
Stage 2	41	41	-	214	214	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	698	649	826	698	649	1030	1356	-	-	1568	-	-
Stage 1	788	725	-	974	861	-	-	-	-	-	-	-
Stage 2	974	861	-	788	725	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	698	649	826	697	649	1030	1356	-	-	1568	-	-
Mov Cap-2 Maneuver	698	649	-	697	649	-	-	-	-	-	-	-
Stage 1	788	725	-	974	861	-	-	-	-	-	-	-
Stage 2	974	861	-	787	725	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1356	-	-	826	-	1568	-	-
HCM Lane V/C Ratio	-	-	-	0.001	-	-	-	-
HCM Control Delay (s)	0	-	-	9.4	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑			↱			↑	↗
Traffic Vol, veh/h	0	0	0	25	0	4	19	94	59	0	78	43
Future Vol, veh/h	0	0	0	25	0	4	19	94	59	0	78	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	34	0	5	26	129	81	0	107	59

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	329	329	170	107	0	0	-	-	0
Stage 1	222	222	-	-	-	-	-	-	-
Stage 2	107	107	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	665	590	874	1484	-	-	0	-	0
Stage 1	815	720	-	-	-	-	0	-	0
Stage 2	917	807	-	-	-	-	0	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	652	0	874	1484	-	-	-	-	-
Mov Cap-2 Maneuver	652	0	-	-	-	-	-	-	-
Stage 1	799	0	-	-	-	-	-	-	-
Stage 2	917	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	1484	-	-	874	-
HCM Lane V/C Ratio	0.018	-	-	0.006	-
HCM Control Delay (s)	7.5	0	-	9.1	-
HCM Lane LOS	A	A	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑						↑↑	↱		↰	
Traffic Vol, veh/h	65	1	59	0	0	0	0	109	6	0	91	6
Future Vol, veh/h	65	1	59	0	0	0	0	109	6	0	91	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	1	72	0	0	0	0	133	7	0	111	7

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	182	255	115	-	0	0	140	0	0
Stage 1	115	115	-	-	-	-	-	-	-
Stage 2	67	140	-	-	-	-	-	-	-
Critical Hdwy	6.63	6.53	6.23	-	-	-	4.13	-	-
Critical Hdwy Stg 1	5.43	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.83	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	-	-	-	2.219	-	-
Pot Cap-1 Maneuver	799	648	937	0	-	-	1442	-	-
Stage 1	909	800	-	0	-	-	-	-	-
Stage 2	948	780	-	0	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	799	0	937	-	-	-	1442	-	-
Mov Cap-2 Maneuver	799	0	-	-	-	-	-	-	-
Stage 1	909	0	-	-	-	-	-	-	-
Stage 2	948	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	937	1442	-	-
HCM Lane V/C Ratio	-	-	0.078	-	-	-
HCM Control Delay (s)	-	-	9.2	0	-	-
HCM Lane LOS	-	-	A	A	-	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	1	0	5	19	27	0	0	16	4
Future Vol, veh/h	0	0	0	1	0	5	19	27	0	0	16	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	0	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	1	0	6	24	35	0	0	21	5

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	107	-	35	26	0	-	-	-	0	
Stage 1	83	-	-	-	-	-	-	-	-	
Stage 2	24	-	-	-	-	-	-	-	-	
Critical Hdwy	6.42	-	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	-	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	891	0	1038	1588	-	0	0	-	-	
Stage 1	940	0	-	-	-	0	0	-	-	
Stage 2	999	0	-	-	-	0	0	-	-	
Platoon blocked, %					-			-	-	
Mov Cap-1 Maneuver	878	0	1038	1588	-	-	-	-	-	
Mov Cap-2 Maneuver	878	0	-	-	-	-	-	-	-	
Stage 1	926	0	-	-	-	-	-	-	-	
Stage 2	999	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	8.6	3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1588	-	878	1038	-	-
HCM Lane V/C Ratio	0.015	-	0.001	0.006	-	-
HCM Control Delay (s)	7.3	0	9.1	8.5	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	1	2	0	0	0	0	41	4	0	15	0
Future Vol, veh/h	4	1	2	0	0	0	0	41	4	0	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	1	2	0	0	0	0	44	4	0	16	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	62	64	16	-	0	0	48	0	0
Stage 1	16	16	-	-	-	-	-	-	-
Stage 2	46	48	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	944	827	1063	0	-	-	1559	-	0
Stage 1	1007	882	-	0	-	-	-	-	0
Stage 2	976	855	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	944	0	1063	-	-	-	1559	-	-
Mov Cap-2 Maneuver	944	0	-	-	-	-	-	-	-
Stage 1	1007	0	-	-	-	-	-	-	-
Stage 2	976	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	944	1063	1559	-
HCM Lane V/C Ratio	-	-	0.005	0.002	-	-
HCM Control Delay (s)	-	-	8.8	8.4	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	0	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	3	0	38	1	5	0	0	49	123
Future Vol, veh/h	0	0	0	3	0	38	1	5	0	0	49	123
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	0	45	1	6	0	0	58	145

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	139	211	6	203	0	-	-	-	0
Stage 1	8	8	-	-	-	-	-	-	-
Stage 2	131	203	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	854	686	1077	1369	-	0	0	-	-
Stage 1	1015	889	-	-	-	0	0	-	-
Stage 2	895	733	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	853	0	1077	1369	-	-	-	-	-
Mov Cap-2 Maneuver	853	0	-	-	-	-	-	-	-
Stage 1	1014	0	-	-	-	-	-	-	-
Stage 2	895	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	1.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1369	-	853	1077	-	-
HCM Lane V/C Ratio	0.001	-	0.004	0.042	-	-
HCM Control Delay (s)	7.6	0	9.2	8.5	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	0.1	-	-

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	1	0	0	0	0	0	4	3	52	5	0
Future Vol, veh/h	3	1	0	0	0	0	0	4	3	52	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	1	0	0	0	0	0	4	3	55	5	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	121	122	5	-	0	0	7	0	0
Stage 1	115	115	-	-	-	-	-	-	-
Stage 2	6	7	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	874	768	1078	0	-	-	1614	-	0
Stage 1	910	800	-	0	-	-	-	-	0
Stage 2	1017	890	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	844	0	1078	-	-	-	1614	-	-
Mov Cap-2 Maneuver	844	0	-	-	-	-	-	-	-
Stage 1	910	0	-	-	-	-	-	-	-
Stage 2	982	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0	6.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	844	-	1614	-
HCM Lane V/C Ratio	-	-	0.005	-	0.034	-
HCM Control Delay (s)	-	-	9.3	0	7.3	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	0	-	0.1	-

Draft Visual Resource Assessment for the Vikings Solar Energy Storage Project

JANUARY 2021

PREPARED FOR

Apex Energy Solutions, LLC

PREPARED BY

SWCA Environmental Consultants

DRAFT VISUAL RESOURCE ASSESSMENT FOR THE VIKINGS SOLAR ENERGY STORAGE PROJECT

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SWCA Project No. 64085

January 2021

CONTENTS

Appendices

Figures

1 INTRODUCTION

SWCA Environmental Consultants (SWCA) has been contracted by Apex Energy Solutions, LLC (the applicant), to evaluate the existing conditions of the landscape within and surrounding the proposed Vikings Solar Energy Storage Project (project) and to describe potential changes to the landscape resulting from the project. This visual resource assessment presents the anticipated visual impact of the project's construction and operation on the scenery and views in the surrounding area based on views from key observation points (KOPs).

The project area is located on approximately 604 acres, 5.8 miles east of Holtsville, Imperial County, California. The project area is north of Interstate 8 (I-8; also known as Kumeyaay Highway) in portions of Sections 12, 22, and 33, Township 15 South, Range 16 East (Figure 1).

2 CHARACTERISTIC LANDSCAPE

The project area consists of previously graded, vacant, former agricultural cropland and undeveloped Sonoran Desert scrub. Within and adjacent to the west of the project area lies the existing New Coachella Canal, a 122-mile aqueduct that conveys Colorado River water from the All-American Canal, through the Imperial Valley, to the Coachella Valley for irrigation purposes. The vicinity of the project area is characterized by open and vast views with flat to undulating topography. A mixed semi-desert landscape is present to the north, east, and south; smooth dirt and soft sand dunes that lead to distant mountain forms are present to the north and east; and agricultural cropland dominates the landscape to the west. Vegetation in the geometric agricultural fields is defined by distinct edges of exposed soils, with consistent groupings of bright yellow to dark green colors and a smooth, carpet-like texture. The vegetation to the north, east, and south is consistent and includes localized, isolated areas of globular shaped trees with pale green foliage and grey with woody trunks and branches ranging from 20 to 50 feet in height, with smooth, light khaki to dark brown, low-profile desert shrubs near residential developments throughout the landscape. Human uses such as agricultural production, electrical transmission, and geothermal energy production occur near the project.

The project area elevation ranges from 10 feet below mean sea level to 60 feet above mean sea level (amsl). The Algodones Dunes, including the Imperial Sand Dunes Recreation Area and North Algodones Dunes Wilderness Area, are approximately 12 miles east of the project area. The dunes consist of gradually sloping sand dune formations that reach up to 400 feet above mean sea level (amsl) and are predominantly obscured from the KOPs due to the height of existing vegetation and structures and the low (inferior) position of local viewing locations.

The overall character of the immediate landscape is agricultural to the west and natural open space to the north, east, and south. The most notable natural features in the landscape are the textured dirt and soft, light tan, scenic sand dunes leading to mountain ranges in the background. The dark grey, subdued formations of the Chocolate Mountains approximately 25 miles to the north of the project area are approximately 2,000 feet amsl and are visible along the horizon; other portions of the mountain range are not prominent in the landscape given their distance from the project area. Agricultural development to the west of the project largely contributes to the human-made changes in the natural landscape, as have surrounding roads and transmission lines with scattered rural residences and agricultural buildings located on subdivided land. The existing human-made features in the landscape are primarily geometric and consist of vertical, continuous, galvanized, grey to silver (metallic) and light brown to dark brown (wood-tone) transmission line infrastructure; rectangular, constructed agricultural buildings; stacked crop bales covered with bright white sheeting; and blocky, bright yellow to dark green agricultural plots.

Additionally, geometric forms from the geothermal energy facilities are visible to the east and south of the project area.

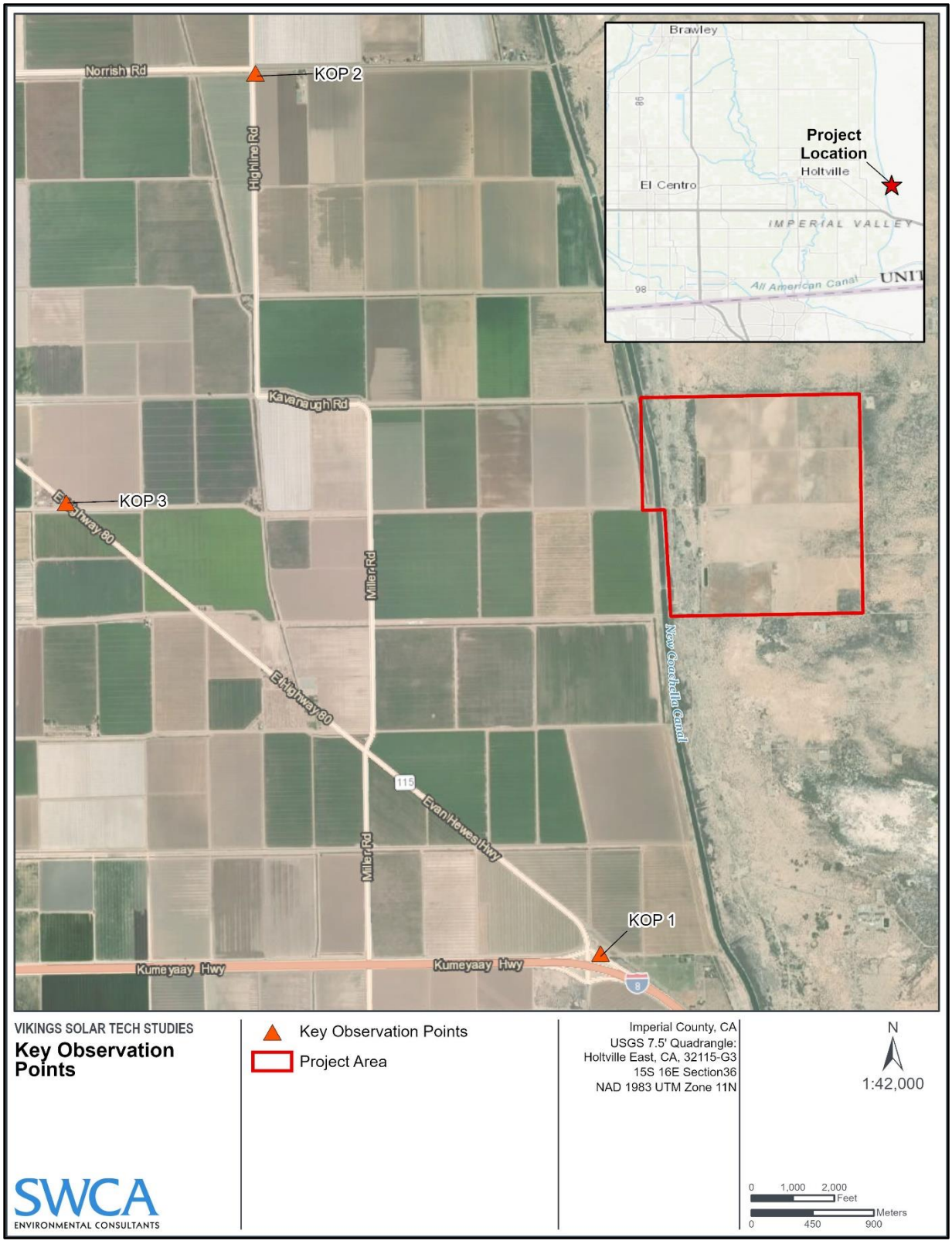

Figure 1. Project and KOP locations.

A network of smooth, light grey to dark grey, paved roads; textured, light tan to dark tan, dirt access roads; and associated road signage is present throughout the entire viewshed. This includes the heavily traveled Evan Hewes Highway (also known as County Route S80 and State Route 115 in this area) and I-8, and lightly traveled local roads. The roads contribute contrast with the existing agricultural fields.

3 METHODS

To provide a systematic basis for evaluating impacts to visual resources resulting from the construction and operation of the proposed project, the assessment was based on the Bureau of Land Management's (BLM) Visual Resource Management System. BLM Form 8400-1 (BLM 1986) was adapted for project purposes and used to document the potential visual contrast of the proposed project components to the surrounding landscape (Appendix A). The BLM's process is an industry standard and is often applied to non-BLM visual assessments to provide project proponents and authorizing agencies a consistent and translatable methodology for understanding visual impacts from proposed projects.

3.1 KOP Identification

KOPs selected for further analysis represent visually sensitive areas that would have potential views of the project and consist of either high-use travel routes, or local roads with nearby residential development.

Assessments of existing visual conditions were made based on professional judgment by SWCA visual resource specialists that took into consideration sensitive receptors and sensitive viewing areas in the project vicinity. In coordination with the applicant and Imperial County representatives, the following three KOPs were identified: KOP 1) the intersection of I-8 and Evan Hewes Highway (representing I-8 travelers south of the project area), KOP 2) the intersection of Norrish Road and Highline Road (representing local road travelers and isolated residences northwest of the project area), and KOP 3) the intersection of Evan Hewes Highway and Nelson Pit Road (representing Evan Hewes Highway travelers east of the project area) (see Figure 1 and appendix B).

3.2 Field Reconnaissance

A field visit to the project area was conducted on December 2, 2020, to document and gain an understanding of the existing landscape character to compare with the character of the proposed project components (e.g., solar arrays, battery storage facility, substation, and generation tie [gen-tie] line), as well as to collect the necessary photo documentation from each KOP for analysis and computer simulations.

An image series of two to three horizontal photographs were taken with a digital single-lens reflex (DSLR) camera at each KOP for use in producing the visual simulations. These images were combined ("stitched") using Adobe Photoshop to create a cylindrical panoramic image that represents a person's average peripheral vision of approximately 125 degrees (horizontally) by 55 degrees (vertically). The stitched photographs represent the view a person would see looking towards the project from each KOP. The photo points were recorded using a global positioning system (GPS) unit and photographs were collected under typical, sunny, and generally clear viewing conditions.

3.3 Visual Simulations

Photo-realistic simulations of the project components were made using ArcGIS, Google Earth Pro, Autodesk products (AutoCAD and 3DS Max), and Adobe Photoshop software for each KOP (Appendix

B). The proposed layout of the solar array, battery storage, substation, and gen-tie were modeled based on most recent design files available, dated December 2020, then the images (or "models") of the layout were superimposed onto the panoramic photographs taken during the field reconnaissance.

The simulations were developed by superimposing a three-dimensional computer model of the proposed project components on a digital elevation model and then placing that onto the base photographs at the correct scale and distance. Date and time-of-day inputs determine shadows and reflected light, and the software accounts for distance and haze to increase accuracy of viewing conditions. The specifications of the project layout included: 1) portrait photovoltaic panels, 2) solar array panels oriented at 30 degrees, and 3) solar array strings placed in rows 15 to 25 feet apart. Project modeling also included a 10-foot-high battery storage system, 230 kilovolt gen-tie line, substation, and 6-foot-high security fence.

3.4 Contrast Analysis

The visual contrast analysis is a qualitative discussion of anticipated contrast between the existing landscape character and the proposed activities and/or facilities. Factors taken into consideration for such an analysis include distance of the proposed project elements from the viewer and the level of perceived contrast between the proposed project elements and the existing landscape. These factors are further defined below.

The following distance zones were used for evaluating impacts on scenery from each KOP:

- Foreground: up to 0.5 mile
- Midground: 0.5 to 3 miles
- Background: 3 to 5 miles

The level of perceived contrast between the proposed project elements and the existing landscape from each KOP were classified using the following terms:

- None: The element contrast is not visible or perceived.
- Weak: The element contrast can be seen but does not attract attention.
- Moderate: The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- Strong: The element contrast demands attention, would not be overlooked, and is dominant in the landscape.

3.5 Glare Analysis

To determine the potential for significant glint or glare from solar panels and other built-project components that may affect residents and motorists traveling on I-8, Evan Hewes Highway, and local roads, SWCA used the Sandia National Laboratory's online Solar Glare Hazard Analysis Tools by Forge Solar. The glare tool and associated report illustrate via Google Earth imagery where the project is located relative to sensitive viewing locations such as airports, KOPs, and roads/highways. Using simple parameters provided by the applicant, the glare analysis provides a quantitative assessment of when and where glare from the project components will occur throughout the year and shows potential effects on the human eye at locations where glare occurs. The glare analysis also assesses the project's energy production so that the applicant can compare alternative designs to maximize energy production while mitigating the impacts of glare. Additional information regarding the orientation and tilt of the

photovoltaic (PV) panels, reflectance of project components, local environmental conditions, and ocular factors (e.g., flash blindness) are considered in the analysis (Forge Solar 2020). The PV panels used in this analysis are fixed-frame racks with a tilt of 30 degrees and a max height of 10 feet above the ground, facing south. As shown in the visual simulations (see Appendix B), the area's agricultural, roaded setting contains screening vegetation and contrasting patches of land. Existing vegetation and structures are considered when analyzing the results of the glare analysis.

4 RESULTS

4.1 Visual Simulations and Contrast Analysis by KOP

Impacts to scenic resources were determined by examining the simulations and evaluating the visual change and contrast with the existing landscape that would result from the construction and operation of the project. The visual impact analysis for each of the three KOPs is provided below. Contrast Rating Worksheets for each of the KOPs are provided in Appendix A.

4.1.1 *KOP 1: Interstate 8 and Evan Hewes Highway, Looking East*

This KOP represents the view of a passenger in a vehicle traveling northwest on Evan Hewes Highway, departing the I-8 overpass, southwest of the project site (see Figure 1). The view from this KOP is characterized by broad, panoramic views of flat, consistent, and horizontal terrain with isolated areas of light khaki to light brown desert shrubs and clustered, low, rounded, globular, moderately tall, green to dark green trees. In the foreground area, distinct agricultural plots are defined by distinct edges of exposed soils and yellow to light green vegetation. Transmission lines made of light brown to dark brown, vertically standing wood poles are consistent horizontally across the landscape. In the background, distant views of the vertical, galvanized metal transmission line and slow, gradual rise in elevation lead to dark-colored landforms. The transmission lines and large, white, stacked crop bales in the midground draw the eye and are a focus of attention from this KOP location due to the dominance and prominence of the features within the broad, panoramic landscape and against the pale blue sky.

The proposed project would be approximately 1.5 miles south of this KOP location. Based on the inferior viewer perspective, the overall distance from the KOP, and the proposed project location in relation to the viewer, the proposed project would not be perceivable from this KOP due to the presence of existing vegetation and agricultural improvements and the prominence of the existing transmission line structures and stacked crop bales in the foreground and midground are the focus of viewer attention. The gen-tie would be perceivable, but would be similar in form, line, color, and texture to the existing transmission line infrastructure in the immediate area. Therefore, it is anticipated that there would be no perceived visual contrast created by the project within the existing landscape from this KOP.

4.1.2 *KOP 2: Norrish Road and Highline Road, Looking Southeast*

This KOP represents the view from local residences and vehicular traffic traveling south on Highline Road, northwest of the project site (see Figure 1). Views of the immediate foreground from this KOP are represented by perpendicular roads with light brown, uniform, rectangular, and white residential and agricultural buildings; light to dark grey, concave, concrete irrigation canals; smooth brown to dark brown, vertical, wood and galvanized metal transmission lines; and fine, light tan soils intermixed with dark tan shrubs. The midground of the KOP includes geometric agricultural plots with light bright green to dark green vegetation divided by light tan access roads consisting of farming equipment. In the background, distant views of concentrated, upright trees are intermixed with the consistent, horizontal

lines of low vegetation in agricultural plots; tall, vertical, galvanized metal transmission lines are visible and consistent across the horizon. The human-made, uniform, rectangular building structures in the foreground draw the eye and are a focus of attention from this KOP because of their prominence against the broad, panoramic landscape and the pale blue sky.

The proposed project area is approximately 2.3 miles southeast of this KOP location. Based on the inferior viewer perspective and the presence of existing features within the immediate foreground area that dominate the viewshed and obstruct views towards the proposed project, the project would not be perceivable from this KOP. In the midground area of the KOP, the irrigated agricultural fields influence visibility of project components due to the similar color characteristics; the light to dark grey tones blend in with the proposed project features. Therefore, it is anticipated that there would be no perceived visual contrast created by the project within the existing landscape from this KOP.

4.1.3 *KOP 3: Evan Hewes Highway and Nelson Pit Road*

This KOP represents the view of a passenger in a vehicle traveling southeast on Evan Hewes Highway west of the project site (see Figure 1). Views from this KOP are characterized by broad, panoramic views of flat, consistent, and horizontal terrain with isolated areas of light khaki to light brown desert shrubs and clustered, low, rounded, globular, moderately tall, green to dark green trees. In the immediate foreground, existing upright, geometric roadway signage is prominent within the vast, horizontal landscape. Distinct edges of exposed soft light tan soils and vegetation along access roads and a concave canal are prominent in the foreground. In the background, distant views of clustered trees with consistent agriculture fields visible across the horizon the lead to dark colored mountain landforms in the distance. The light tan horizontal access road and parallel canal in the foreground draw the eye to the isolated residence in the midground and are a focus of attention from this location because of their prominence in the broad, panoramic landscape.

The proposed project would be approximately 2.6 miles east of this KOP location. Based on the inferior viewer perspective, the proposed project location in relation to the viewer, the overall distance from the KOP, the presence of existing vegetation, and the isolated landforms in the background, the proposed project would not be perceivable from this KOP. From KOP 3, much of the project area is obscured by existing vegetation, residential and agricultural structures, and existing transmission lines. Therefore, it is anticipated that there would be no perceived visual contrast created by the project within the existing landscape from this KOP.

4.2 Glare Analysis

The analysis concluded that the project has the possibility to create low-potential afterimage (green ocular impact) and potential temporary afterimage (yellow ocular impact) glare for the receptors looking directly east at project site from KOP 3. Viewers at KOP 3 may experience glare from the northeastern-most project array area if no vegetation or structures are in the field of view. KOP 3 will have potential for glare for up to 133 minutes per year; the glare would occur from mid-March to mid-April and mid-August to mid-September, within the hour between 2:30PM and 3:30PM, for approximately 5 minutes per day. The analysis determined that the other array areas will not produce glare. The results from the solar glare analysis are provided in Appendix C.

Regarding the nearest airport (Holtville Airport, approximately 1.5 miles north of the project area), four potential flight paths were considered. During takeoff and landing procedures, airborne viewers (e.g., pilots) would be elevated in relation to the project area. The results of the glare analysis conducted for this project indicate that airborne viewers would not experience glare within the four, 2-mile-long

takeoff and landing flight path segments analyzed by ForgeSolar established parameters to meet FAA requirements. This airport does not have an air traffic control tower, so no tower viewers were analyzed.

5 PRELIMINARY CEQA ANALYSIS

This technical report will inform the overall evaluation of potential environmental effects from the project in order to satisfy the requirements of the California Environmental Quality Act (CEQA). There are four CEQA criteria for aesthetics that the project must meet. Each criteria is presented here as a question, with preliminary assessments of project impacts to visual resources provided as answers.

1. Would the project have a substantial adverse effect on a scenic vista?

   No Impact. There are no designated scenic vistas in the project vicinity. As described above in Section 4.1, the project would not have a substantial adverse effect on the expansive views from the three KOPs. Rather, the thin horizontal edge of solar arrays and rectangular geometric shapes of the project facilities would be absorbed into the existing vegetation and built features with similar lines, forms, and colors that comprise the landscape. Therefore, no impacts to scenic vistas would occur.

2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

   No Impact. There are no designated or eligible scenic highways in the project vicinity.

3. Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

   Less Than Significant. The existing visual character from public viewpoints would not be substantially altered in the vicinity of the project site. From KOP 1, which represents an elevated view overlooking the project area, the proposed gen-tie line would be visible but would be mostly unnoticed due to the current existing structures that obscure the view. From KOP 2, the project visually blends in with the existing built features and irrigated agricultural fields between the viewer and the project area. The view from KOP 3 is mostly blocked by existing vegetation, residential and agricultural structures, and transmission lines running east to west across the landscape. As previously described, the project would not substantially degrade the existing visual character or quality of public views from this distance; rather, the horizontal and rectangular project facilities would appear to be absorbed into the existing vegetation and built features that comprise the broader landscape. The project would not substantially degrade existing visual character and quality and the impact would be less than significant.

4. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

   Less Than Significant. The project would not include any substantial source of nighttime light in the vicinity of the project site. Any lighting required for safety and security within the project site would be hooded and oriented downward.

   The glare analysis for the project concluded that viewers at KOP 3 may experience glare from the northeastern-most project array area if no vegetation or structures are in the field of view, and that the other array areas will not produce glare (see Appendix C). KOP 3 will have potential for glare

for approximately 10 minutes a day for 2 months a year. However, given the presence of existing vegetation and structures, it likely that these effects would be less than significant.

5.1 Suggested Mitigation Measures

Project impacts were evaluated against the CEQA significance criteria above to identify opportunities to mitigate for impacts to aesthetics and visual resources resulting from sources of visual contrast and glare that would potentially affect views in the area. Mitigation measures such as the use of non-reflective materials, finishes and surface treatments on project components in addition to vegetation screening, would further reduce visual contrast and glare associated with the project.

Visual barriers, to include vegetation, are the most effective at mitigating glare from solar arrays when the vegetation is located as close to the glare source as possible. If vegetation is used, native and naturalized plants should be specified to match or complement existing vegetation within the area. Existing vegetation within and surrounding the project area should be maintained and preserved to the greatest extent possible. Preserving existing vegetation will reduce the project's overall impact on the existing health of soils, wildlife, cost, and visual aesthetics.

6 LITERATURE CITED

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APPENDIX A

Contrast Rating Worksheets

VISUAL CONTRAST RATING WORKSHEET

Date: 12/2/2020

Project Name: **Vikings Solar Energy**	Key Observation Point Number: **KOP 1**
Project Type: Solar Facility	Key Observation Point Name: Interstate 8 and Evans Hewes Highway
Evaluator's Names: Spenser Branch/ Chris Bockey	Photo Numbers: 2198-2200

CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Smooth, broad, flat agricultural land leading up to undulating mountains in the distant background	Distinctive geometric, agricultural fields Clustered, vertical, amorphic deciduous trees Isolated areas of low rounded globular shrubs	Vertical, thin, transmission line structures with distinctive horizontal connector arms Irregular to geometric elements of agricultural equipment Rectangular, linear stacked crop bails Rectangular, concave, continuous irrigation ditches
LINE	Distinctive, horizontal, continuous lines	Irregular, broken shrubs in foreground Distinct edges of exposed soils and agricultural vegetation at transitions	Bold, vertical transmission line structures with softly curved horizontal transmission line wires
COLOR	Variations of light khaki to light brown exposed soils	Light tan-muted rust-light grey shrubs Yellow-green agriculture fields	Bright-white crop bails Galvanized, grey to silver transmission structures Light brown to dark brown tones in wood transmission line structures Light grey to dark grey concrete road and irrigation ditches
TEX-TURE	Smooth, consistent, directional Fine, soft soils	Smooth, carpet-like texture of agriculture fields Clustered, coarse areas of shrubs and deciduous tress	Continuous and repetitive transmission line infrastructure Isolated and geometric, smooth surfaced crop bail covers

PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No perceived change	No perceived change	Thin, horizontal or regular edge of solar arrays Rectangular, geometric battery storage infrastructure Geometric, angular transmission line interconnect facility
LINE	No perceived change	No perceived change	Horizontal line of solar array edge Horizontal and vertical lines of battery storage facility
COLOR	No perceived change	No perceived change	Dark subdued grey to blue black of solar arrays Light grey earth tones of battery storage facility Muted reflective grey substation and transmission line infrastructure

TEXTURE	No perceived change	No perceived change	Smooth, continuous, organized, solar facility infrastructure Vertical, repetitive transmission line structures

CONTRAST ANALYSIS

DEGREE OF CONSTRAST		FEATURES												
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form				X				X			X		
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X				X	

Recommended Mitigation Measures

Materials and surface treatments for structures and roads should repeat and/or blend with the existing form, line, color, and texture of the surrounding landscape. For example, if the project will be viewed against an earthen or other non-sky background, appropriately colored materials should be selected to help blend structures with the project's backdrop.

Unless safety or functional requirements preclude it, all structures should be color treated to reduce contrasts with existing landscape.

Materials, coatings, or paints that have little or no reflectivity should be used on structures. Semi-gloss finishes should be used rather than flat or gloss finishes. Substation equipment should be specified with a low-reflectivity, neutral finish. Insulators at substations should be non-reflective. The surfaces of substation structures should be given low reflectivity finishes with neutral colors to minimize the contrast of the structures with their backdrops. Security fence surrounding the substations should have a dulled, darkened finish to reduce contrast.

Electric transmission towers should be color treated to reduce contrasts with the existing landscape. Monopole towers should have a low-reflectivity treatment. Where transmission facilities using monopole towers are located within the same ROW or corridor, the color treatment should match the existing facilities within the ROW, unless they contrast with the visual backdrop.

Notes

VISUAL CONTRAST RATING WORKSHEET

Date: 12/2/2020

Project Name: **Vikings Solar Energy**	Key Observation Point Number: **KOP 2**
Project Type: Solar Facility	Key Observation Point Name: Norrish Road and Highline Road
Evaluator's Names: Spenser Branch/Chris Bockey	Photo Numbers: 2452-2453

CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Endless, broad, flat, vast open terrain	Distinct agricultural plot Cluster of deciduous trees in foreground and sporadic areas of trees in the background	Isolated rectangular farming buildings Concave concrete canal Consistent transmission lines in foreground and background Prominent concrete irrigation canal
LINE	Perpendicular, consistent lines through terrain	Irregular, broken shrubs in foreground Distinct edges of exposed agriculture soils	Perpendicular road and vertical transmission lines with curved sagging conductor wires Rectangular concave irrigation ditch Horizontal continuous elements
COLOR	Light brown-dark brown soils	Light tan-brown desert shrubs Yellow green-dark green tees Bright green-green vegetation in midground	Light brown to dark brown tones in wood transmission line Light grey to dark grey concrete irrigation ditch Light grey-grey water irrigating agriculture
TEX-TURE	Smooth, consistent terrain Fine, smooth soils	Inconsistent patches of trees Smooth low laying clusters of shrubs	Uniform farming buildings Ordered consistent transmission lines Smooth matt concrete road and canal

PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No perceived change	No perceived change	Thin or horizontal or regular edge for solar arrays Geometric isolation Rectangular battery storage Transmission interconnect
LINE	No perceived change	No perceived change	Horizontal line from solar array edge Horizontal and vertical lines from battery storage
COLOR	No perceived change	No perceived change	Dark subdued grey to blue black solar arrays Light grey earth tones from battery storage Muted reflective grey substation and transmission
TEX-TURE	No perceived change	No perceived change	Smooth solar facility Vertical transmission lines

CONTRAST ANALYSIS

DEGREE OF CONSTRAST		FEATURES												
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form				X				X			X		
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X				X	

Recommended Mitigation Measures

Materials and surface treatments for structures and roads should repeat and/or blend with the existing form, line, color, and texture of the surrounding landscape. For example, if the project will be viewed against an earthen or other non-sky background, appropriately colored materials should be selected to help blend structures with the project's backdrop.

Unless safety or functional requirements preclude it, all structures should be color treated to reduce contrasts with existing landscape.

Materials, coatings, or paints that have little or no reflectivity should be used on structures. Semi-gloss finishes should be used rather than flat or gloss finishes. Substation equipment should be specified with a low-reflectivity, neutral finish. Insulators at substations should be non-reflective. The surfaces of substation structures should be given low reflectivity finishes with neutral colors to minimize the contrast of the structures with their backdrops. Security fence surrounding the substations should have a dulled, darkened finish to reduce contrast.

Electric transmission towers should be color treated to reduce contrasts with the existing landscape. Monopole towers should have a low-reflectivity treatment. Where transmission facilities using monopole towers are located within the same ROW or corridor, the color treatment should match the existing facilities within the ROW, unless they contrast with the visual backdrop.

Notes

VISUAL CONTRAST RATING WORKSHEET

Date: 12/2/2020

Project Name: **Vikings Solar Energy**	Key Observation Point Number: **KOP 3**
Project Type: Solar Facility	Key Observation Point Name: Evans Hewes Highway and Nelson Pit Road
Evaluator's Names: Spenser Branch/Chris Bockey	Photo Numbers: 2276-2277

CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Broad, flat fast land that appears endless along horizon	Distinct agricultural plots Cluster of deciduous trees in midground	Isolated rectangular buildings Consistent transmission lines in and background Prominent concave concrete irrigation canal
LINE	Horizontal perpendicular and consistent lines appear through terrain	Consistent shrubs parallel canal Distinct edges of exposed agriculture soils Horizontal continuous agriculture plots	Vertical transmission lines in background Vertical poles and street signs in foreground Circular concrete canal
COLOR	Light tan-dark brown soils Green-brown-light tan desert shrubs	Light tan-brown desert shrubs Light green-dark green tees Bright green- dark green agriculture	Light brown to dark brown tones in wood street sign Light grey to dark grey concrete irrigation ditch Bright white buildings Galvanized transmission lines
TEX-TURE	Smooth, consistent terrain Fine, smooth soils	Inconsistent clustered areas of trees Smooth low laying clusters of shrubs Soft smooth agriculture	Consistent transmission line in background Rough, cracked uneven road

PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No perceived change	No perceived change	Thin or horizontal or regular edge for solar arrays Geometric isolation Rectangular battery storage Transmission interconnect
LINE	No perceived change	No perceived change	Horizontal line from solar array edge Horizontal and vertical lines from battery storage
COLOR	No perceived change	No perceived change	Dark subdued grey to blue black solar arrays Light grey earth tones from battery storage Muted reflective grey substation and transmission
TEX-TURE	No perceived change	No perceived change	Smooth solar facility Vertical transmission lines

CONTRAST ANALYSIS

DEGREE OF CONSTRAST		FEATURES												
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form				X				X			X		
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X				X	

Recommended Mitigation Measures

Materials and surface treatments for structures and roads should repeat and/or blend with the existing form, line, color, and texture of the surrounding landscape. For example, if the project will be viewed against an earthen or other non-sky background, appropriately colored materials should be selected to help blend structures with the project's backdrop.

Unless safety or functional requirements preclude it, all structures should be color treated to reduce contrasts with existing landscape.

Materials, coatings, or paints that have little or no reflectivity should be used on structures. Semi-gloss finishes should be used rather than flat or gloss finishes. Substation equipment should be specified with a low-reflectivity, neutral finish. Insulators at substations should be non-reflective. The surfaces of substation structures should be given low reflectivity finishes with neutral colors to minimize the contrast of the structures with their backdrops. Security fence surrounding the substations should have a dulled, darkened finish to reduce contrast.

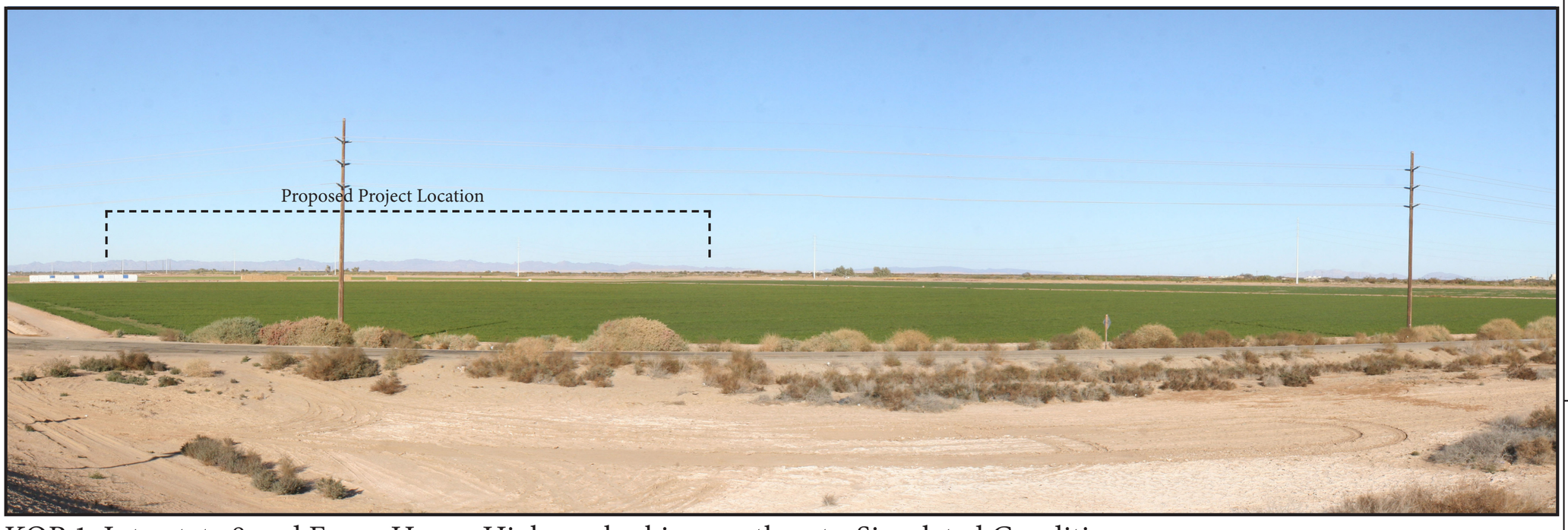
Electric transmission towers should be color treated to reduce contrasts with the existing landscape. Monopole towers should have a low-reflectivity treatment. Where transmission facilities using monopole towers are located within the same ROW or corridor, the color treatment should match the existing facilities within the ROW, unless they contrast with the visual backdrop.

Notes

APPENDIX B

Visual Simulations

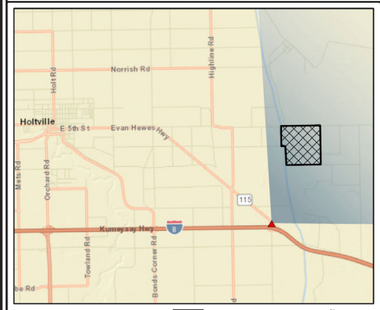
KOP 1: Interstate 8 and Evens Hewes Highway looking northeast - Existing Condition



KOP 1: Interstate 8 and Evens Hewes Highway looking northeast - Simulated Condition

Vikings Solar Energy Storage Project

KOP 1: Interstate 8 and Evens Hewes Highway



Base Photographic Documentation

Date	12/02/2020
Time (24H)	14:20
Longitude (°)	-115.285089
Latitude (°)	32.774261
Viewpoint Elevation (ft)	29
Camera Height (m)	1.5
Camera Heading(deg.)	15

Camera Information

Camera Make & Model	Canon 20D
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	Canon EFS 18-55 mm
Lens Focal Legth	24mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth (°)	281.09
Sun Elevation (°)	-58.22
Lighting Angle on Project	Back Lit
Weather Conditions	Sunny
Avg. Predicted Visibility	10 miles
Tempature (°F)	72
Humidity (%)	40

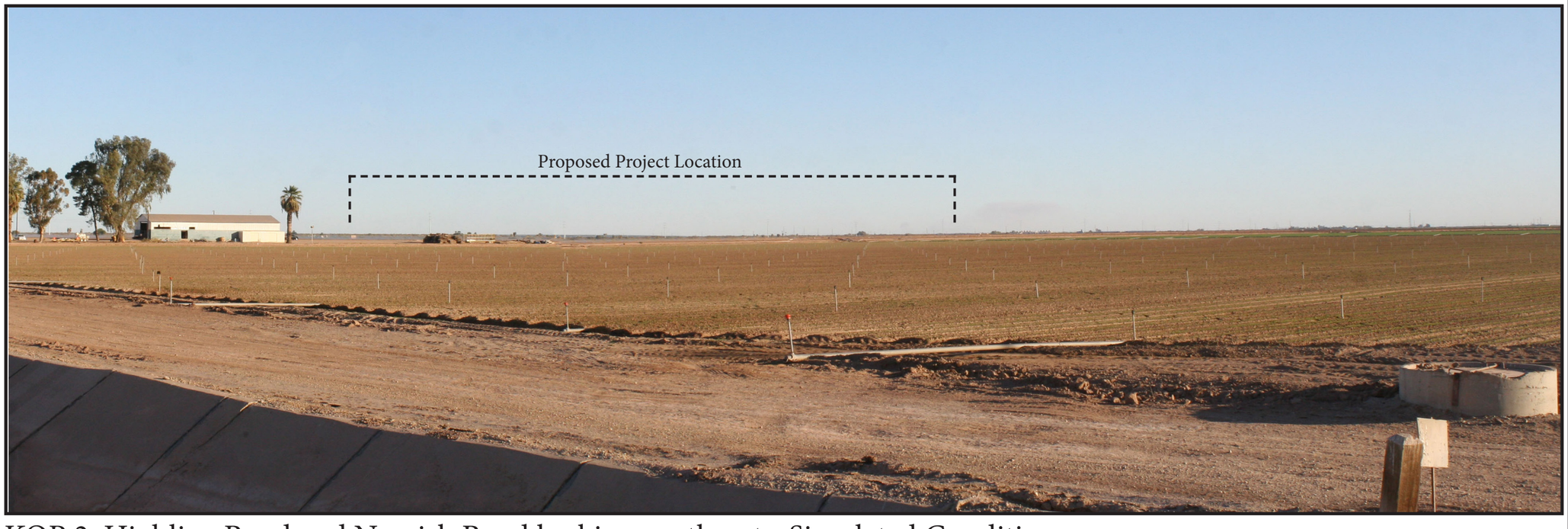
Proposed Infrastructure Information

Closest Distance to Project	1.55 miles
Solar Array Max. Height	10 ft
Battery Storage Max Height	10 ft
Gen-tie Max Height	120 ft

Simulation was prepared using information provided by Apex Energy Solutions, LLC. Solar facility locations, colors, and heights may differ based on final engineering and design.

SWCA® ENVIRONMENTAL CONSULTANTS

KOP 2: Highline Road and Norrish Road looking southeast - Existing Condition



KOP 2: Highline Road and Norrish Road looking southeast - Simulated Condition

Vikings Solar Energy Storage Project

KOP 2: Highline Road and Norrish Road

Base Photographic Documentation

Date	12/02/2020
Time (24H)	15:20
Longitude (°)	-115.310505
Latitude (°)	32.832418
Viewpoint Elevation (ft)	-1
Camera Height (m)	1.5
Camera Heading(deg.)	131

Camera Information

Camera Make & Model	Canon 20D
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	Canon EFS 18-55 mm
Lens Focal Legth	24mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth (°)	298.08
Sun Elevation (°)	-70.08
Lighting Angle on Project	Back Lit
Weather Conditions	Sunny
Avg. Predicted Visibility	10 miles
Tempature (°F)	72
Humidity (%)	40

Proposed Infrastructure Information

Closest Distance to Project	1.55 miles
Solar Array Max. Height	10 ft
Battery Storage Max Height	10 ft
Gen-tie Max Height	120 ft

Simulation was prepared using information provided by Apex Energy Solutions, LLC. Solar facility locations, colors, and heights may differ based on final engineering and design.

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KOP 3: Evans Hewes Highway and Nelson Pit Road looking east - Existing Condition

KOP 3: Evans Hewes Highway and Nelson Pit Road looking east - Simulated Condition

Vikings Solar Energy Storage Project

KOP 3:Evans Hewes Highway and Nelson Pit Road

Base Photographic Documentation

Date	12/02/2020
Time (24H)	15:00
Longitude (°)	-115.325384
Latitude (°)	32.803724
Viewpoint Elevation (ft)	-5
Camera Height (m)	1.5
Camera Heading(deg.)	90

Camera Information

Camera Make & Model	Canon 20D
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	Canon EFS 18-55 mm
Lens Focal Legth	24mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth (°)	288.78
Sun Elevation (°)	-67
Lighting Angle on Project	Back Lit
Weather Conditions	Sunny
Avg. Predicted Visibility	10 miles
Tempature (°F)	72
Humidity (%)	40

Proposed Infrastructure Information

Closest Distance to Project	1.55 miles
Solar Array Max. Height	10 ft
Battery Storage Max Height	10 ft
Gen-tie Max Height	120 ft

Simulation was prepared using information provided by Apex Energy Solutions, LLC. Solar facility locations, colors, and heights may differ based on final engineering and design.

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APPENDIX C

Solar Glare Analysis

ForgeSolar

Site Configuration: Vikings Solar

Project site configuration details and results.

Created **Jan. 11, 2021 1:26 p.m.**
Updated **Jan. 11, 2021 1:31 p.m.**
DNI **varies** and peaks at **1,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC0**
Site Configuration ID: 47824.8552

Summary of Results

Glare with potential for temporary after-image predicted

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	30.0	180.0	1	133	-

Component Data

PV Array(s)

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: PV array 1
Axis tracking: Fixed (no rotation)
Tilt: 30.0 deg
Orientation: 180.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 24,710,932 sq-ft

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.810676	-115.263538	33.92	10.00	43.92
2	32.810660	-115.281104	25.04	10.00	35.04
3	32.803254	-115.280664	22.21	10.00	32.21
4	32.803254	-115.276329	39.44	10.00	49.44
5	32.796076	-115.276372	37.03	10.00	47.03
6	32.796076	-115.263476	33.39	10.00	43.39

2-Mile Flight Path Receptor(s)

Name: FP 1
Description:
Threshold height : 50 ft
Direction: 270.0 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	32.844902	-115.259474	55.33	50.00	105.34
2-mile point	32.844907	-115.225020	77.35	581.44	658.79

Name: FP 2
Description:
Threshold height : 50 ft
Direction: 90.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	32.845046	-115.278113	57.80	50.00	107.80
2-mile point	32.845157	-115.312567	-2.68	663.94	661.26

Name: FP 3
Description:
Threshold height : 50 ft
Direction: 135.9 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	32.844311	-115.276263	55.57	50.00	105.58
2-mile point	32.865074	-115.300240	0.16	658.87	659.03

Name: FP 4
Description:
Threshold height : 50 ft
Direction: 313.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	32.834324	-115.264681	40.55	50.00	90.55
2-mile point	32.814561	-115.239535	59.98	584.02	644.00

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	32.774646	-115.285503	24.69	5.00	29.69
OP 2	32.832699	-115.310713	-0.87	5.00	4.13
OP 3	32.803762	-115.325448	-3.77	5.00	1.23

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	30.0	180.0	1	133	-	-

Click the name of the PV array to scroll to its results

PV & Receptor Analysis Results detailed results for each PV array and receptor

PV array 1 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	1	133

PV array 1 - Receptor (FP 1)

No glare found

PV array 1 - Receptor (FP 2)

No glare found

PV array 1 - Receptor (FP 3)

No glare found

PV array 1 - Receptor (FP 4)

No glare found

PV array 1 - OP Receptor (OP 1)

No glare found

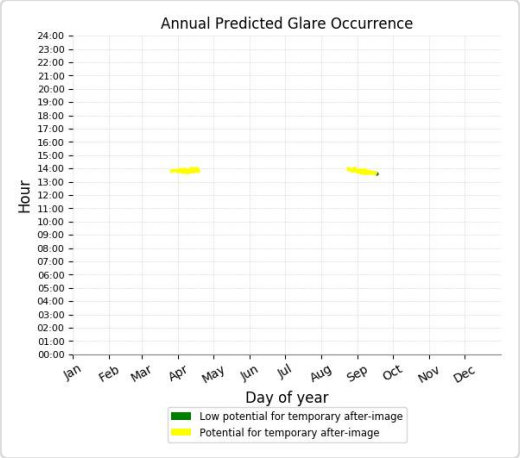
PV array 1 - OP Receptor (OP 2)

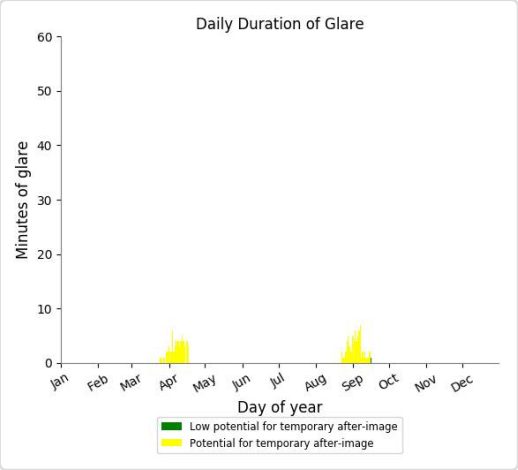
No glare found

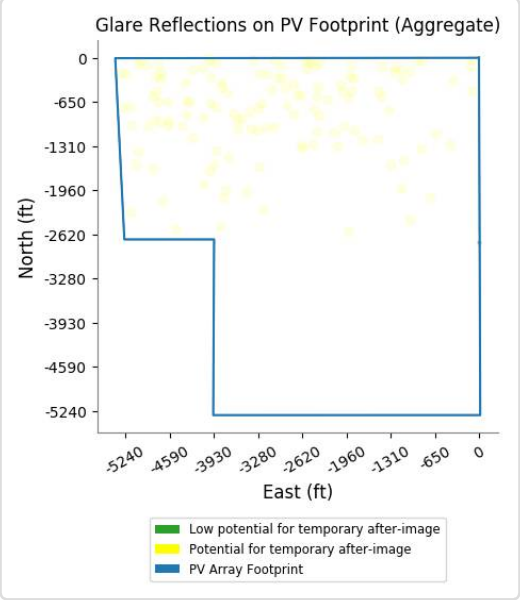
PV array 1 - OP Receptor (OP 3)

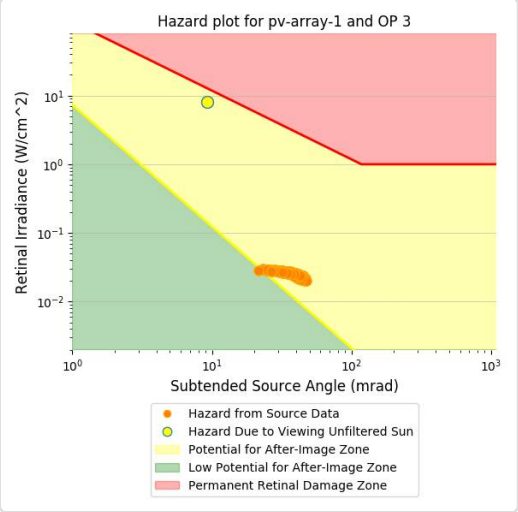
PV array is expected to produce the following glare for receptors at this location:

- 1 minutes of "green" glare with low potential to cause temporary after-image.
- 133 minutes of "yellow" glare with potential to cause temporary after-image.









Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. I should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

Visual Resource Assessment for the Vikings Solar Energy Storage Project

JANUARY 2021

PREPARED FOR

Vikings Energy Farm, LLC

PREPARED BY

SWCA Environmental Consultants

VISUAL RESOURCE ASSESSMENT FOR THE VIKINGS SOLAR ENERGY STORAGE PROJECT

Prepared for

Vikings Energy Farm, LLC
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SWCA Project No. 64085

January 2021

CONTENTS

Appendices

Figures

1 INTRODUCTION

SWCA Environmental Consultants (SWCA) has been contracted by Vikings Energy Farm, LLC (the applicant), to evaluate the existing conditions of the landscape within and surrounding the proposed Vikings Solar Energy Storage Project (project) and to describe potential changes to the landscape resulting from the project. This visual resource assessment presents the anticipated visual impact of the project's construction and operation on the scenery and views in the surrounding area based on views from key observation points (KOPs).

The project area is located on approximately 604 acres, 5.8 miles east of Holtsville, Imperial County, California. The project area is north of Interstate 8 (I-8; also known as Kumeyaay Highway) in portions of Sections 12, 22, and 33, Township 15 South, Range 16 East (Figure 1).

2 CHARACTERISTIC LANDSCAPE

The project area consists of previously graded, vacant, former agricultural cropland and undeveloped Sonoran Desert scrub. Within and adjacent to the west of the project area lies the existing New Coachella Canal, a 122-mile aqueduct that conveys Colorado River water from the All-American Canal, through the Imperial Valley, to the Coachella Valley for irrigation purposes. The vicinity of the project area is characterized by open and vast views with flat to undulating topography. A mixed semi-desert landscape is present to the north, east, and south; smooth dirt and soft sand dunes that lead to distant mountain forms are present to the north and east; and agricultural cropland dominates the landscape to the west. Vegetation in the geometric agricultural fields is defined by distinct edges of exposed soils, with consistent groupings of bright yellow to dark green colors and a smooth, carpet-like texture. The vegetation to the north, east, and south is consistent and includes localized, isolated areas of globular shaped trees with pale green foliage and grey with woody trunks and branches ranging from 20 to 50 feet in height, with smooth, light khaki to dark brown, low-profile desert shrubs near residential developments throughout the landscape. Human uses such as agricultural production, electrical transmission, and geothermal energy production occur near the project.

The project area elevation ranges from 10 feet below mean sea level to 60 feet above mean sea level (amsl). The Algodones Dunes, including the Imperial Sand Dunes Recreation Area and North Algodones Dunes Wilderness Area, are approximately 12 miles east of the project area. The dunes consist of gradually sloping sand dune formations that reach up to 400 feet above mean sea level (amsl) and are predominantly obscured from the KOPs due to the height of existing vegetation and structures and the low (inferior) position of local viewing locations.

The overall character of the immediate landscape is agricultural to the west and natural open space to the north, east, and south. The most notable natural features in the landscape are the textured dirt and soft, light tan, scenic sand dunes leading to mountain ranges in the background. The dark grey, subdued formations of the Chocolate Mountains approximately 25 miles to the north of the project area are approximately 2,000 feet amsl and are visible along the horizon; other portions of the mountain range are not prominent in the landscape given their distance from the project area. Agricultural development to the west of the project largely contributes to the human-made changes in the natural landscape, as have surrounding roads and transmission lines with scattered rural residences and agricultural buildings located on subdivided land. The existing human-made features in the landscape are primarily geometric and consist of vertical, continuous, galvanized, grey to silver (metallic) and light brown to dark brown (wood-tone) transmission line infrastructure; rectangular, constructed agricultural buildings; stacked crop bales covered with bright white sheeting; and blocky, bright yellow to dark green agricultural plots.

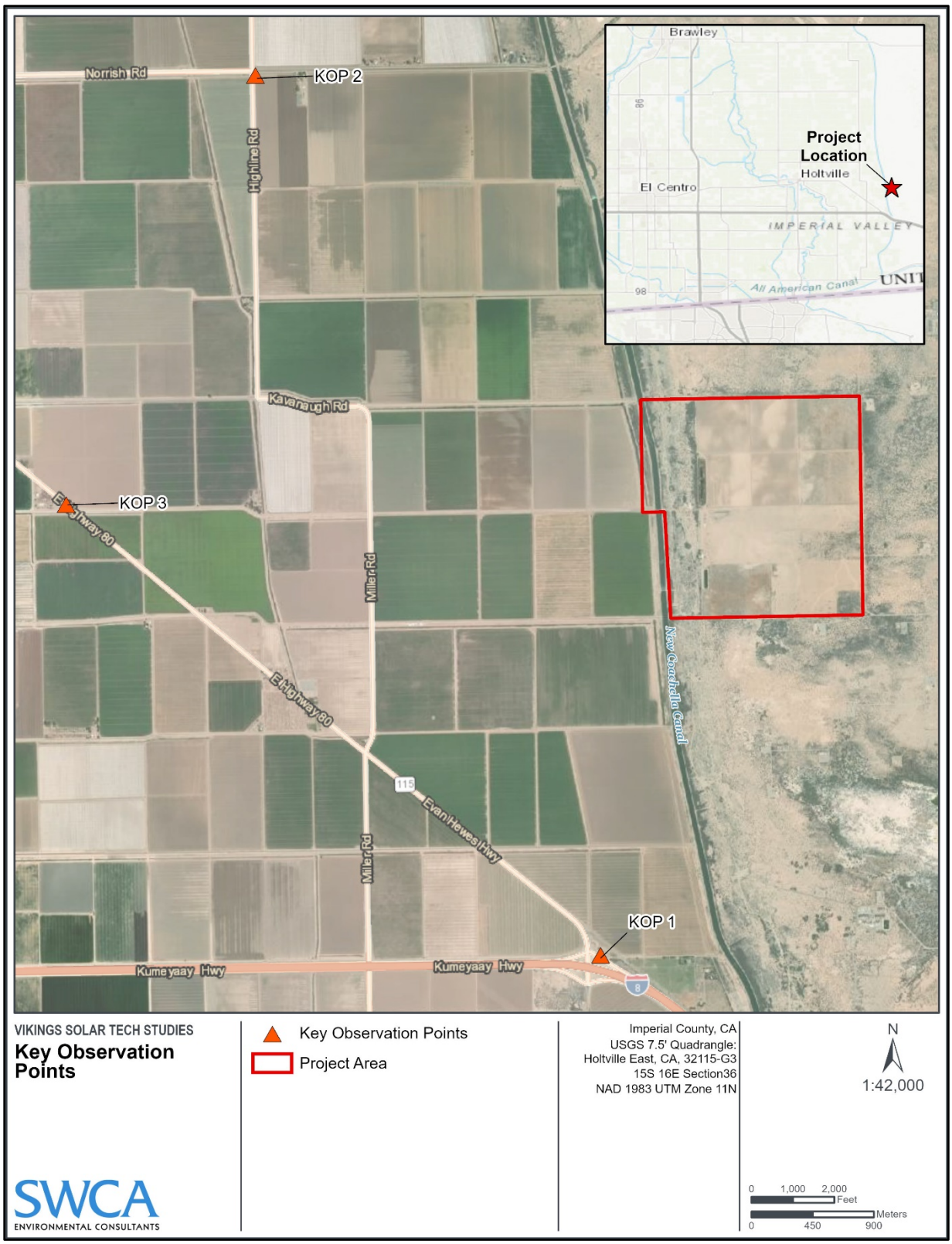


Figure 1. Project and KOP locations.

Additionally, geometric forms from the geothermal energy facilities are visible to the east and south of the project area.

A network of smooth, light grey to dark grey, paved roads; textured, light tan to dark tan, dirt access roads; and associated road signage is present throughout the entire viewshed. This includes the heavily traveled Evan Hewes Highway (also known as County Route S80 and State Route 115 in this area) and I-8, and lightly traveled local roads. The roads contribute contrast with the existing agricultural fields.

3 METHODS

To provide a systematic basis for evaluating impacts to visual resources resulting from the construction and operation of the proposed project, the assessment was based on the Bureau of Land Management's (BLM) Visual Resource Management System. BLM Form 8400-1 (BLM 1986) was adapted for project purposes and used to document the potential visual contrast of the proposed project components to the surrounding landscape (Appendix A). The BLM's process is an industry standard and is often applied to non-BLM visual assessments to provide project proponents and authorizing agencies a consistent and translatable methodology for understanding visual impacts from proposed projects.

3.1 KOP Identification

KOPs selected for further analysis represent visually sensitive areas that would have potential views of the project and consist of either high-use travel routes, or local roads with nearby residential development.

Assessments of existing visual conditions were made based on professional judgment by SWCA visual resource specialists that took into consideration sensitive receptors and sensitive viewing areas in the project vicinity. In coordination with the applicant and Imperial County representatives, the following three KOPs were identified: KOP 1) the intersection of I-8 and Evan Hewes Highway (representing I-8 travelers south of the project area), KOP 2) the intersection of Norrish Road and Highline Road (representing local road travelers and isolated residences northwest of the project area), and KOP 3) the intersection of Evan Hewes Highway and Nelson Pit Road (representing Evan Hewes Highway travelers east of the project area) (see Figure 1 and appendix B).

3.2 Field Reconnaissance

A field visit to the project area was conducted on December 2, 2020, to document and gain an understanding of the existing landscape character to compare with the character of the proposed project components (e.g., solar arrays, battery storage facility, substation, and generation tie [gen-tie] line), as well as to collect the necessary photo documentation from each KOP for analysis and computer simulations.

An image series of two to three horizontal photographs were taken with a digital single-lens reflex (DSLR) camera at each KOP for use in producing the visual simulations. These images were combined ("stitched") using Adobe Photoshop to create a cylindrical panoramic image that represents a person's average peripheral vision of approximately 125 degrees (horizontally) by 55 degrees (vertically). The stitched photographs represent the view a person would see looking towards the project from each KOP. The photo points were recorded using a global positioning system (GPS) unit and photographs were collected under typical, sunny, and generally clear viewing conditions.

3.3 Visual Simulations

Photo-realistic simulations of the project components were made using ArcGIS, Google Earth Pro, Autodesk products (AutoCAD and 3DS Max), and Adobe Photoshop software for each KOP (Appendix B). The proposed layout of the solar array, battery storage, substation, and gen-tie were modeled based on most recent design files available, dated December 2020, then the images (or "models") of the layout were superimposed onto the panoramic photographs taken during the field reconnaissance.

The simulations were developed by superimposing a three-dimensional computer model of the proposed project components on a digital elevation model and then placing that onto the base photographs at the correct scale and distance. Date and time-of-day inputs determine shadows and reflected light, and the software accounts for distance and haze to increase accuracy of viewing conditions. The specifications of the project layout included: 1) portrait photovoltaic panels, 2) solar array panels oriented at 30 degrees, and 3) solar array strings placed in rows 15 to 25 feet apart. Project modeling also included a 10-foot-high battery storage system, 230 kilovolt gen-tie line, substation, and 6-foot-high security fence.

3.4 Contrast Analysis

The visual contrast analysis is a qualitative discussion of anticipated contrast between the existing landscape character and the proposed activities and/or facilities. Factors taken into consideration for such an analysis include distance of the proposed project elements from the viewer and the level of perceived contrast between the proposed project elements and the existing landscape. These factors are further defined below.

The following distance zones were used for evaluating impacts on scenery from each KOP:

- Foreground: up to 0.5 mile
- Midground: 0.5 to 3 miles
- Background: 3 to 5 miles

The level of perceived contrast between the proposed project elements and the existing landscape from each KOP were classified using the following terms:

- None: The element contrast is not visible or perceived.
- Weak: The element contrast can be seen but does not attract attention.
- Moderate: The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- Strong: The element contrast demands attention, would not be overlooked, and is dominant in the landscape.

3.5 Glare Analysis

To determine the potential for significant glint or glare from solar panels and other built-project components that may affect residents and motorists traveling on I-8, Evan Hewes Highway, and local roads, SWCA used the Sandia National Laboratory's online Solar Glare Hazard Analysis Tools by Forge Solar. The glare tool and associated report illustrate via Google Earth imagery where the project is located relative to sensitive viewing locations such as airports, KOPs, and roads/highways. Using simple parameters provided by the applicant, the glare analysis provides a quantitative assessment of when and

where glare from the project components will occur throughout the year and shows potential effects on the human eye at locations where glare occurs. The glare analysis also assesses the project's energy production so that the applicant can compare alternative designs to maximize energy production while mitigating the impacts of glare. Additional information regarding the orientation and tilt of the photovoltaic (PV) panels, reflectance of project components, local environmental conditions, and ocular factors (e.g., flash blindness) are considered in the analysis (Forge Solar 2020). The PV panels used in this analysis are fixed-frame racks with a tilt of 30 degrees and a max height of 10 feet above the ground, facing south. As shown in the visual simulations (see Appendix B), the area's agricultural, roaded setting contains screening vegetation and contrasting patches of land. Existing vegetation and structures are considered when analyzing the results of the glare analysis.

4 RESULTS

4.1 Visual Simulations and Contrast Analysis by KOP

Impacts to scenic resources were determined by examining the simulations and evaluating the visual change and contrast with the existing landscape that would result from the construction and operation of the project. The visual impact analysis for each of the three KOPs is provided below. Contrast Rating Worksheets for each of the KOPs are provided in Appendix A.

4.1.1 *KOP 1: Interstate 8 and Evan Hewes Highway, Looking East*

This KOP represents the view of a passenger in a vehicle traveling northwest on Evan Hewes Highway, departing the I-8 overpass, southwest of the project site (see Figure 1). The view from this KOP is characterized by broad, panoramic views of flat, consistent, and horizontal terrain with isolated areas of light khaki to light brown desert shrubs and clustered, low, rounded, globular, moderately tall, green to dark green trees. In the foreground area, distinct agricultural plots are defined by distinct edges of exposed soils and yellow to light green vegetation. Transmission lines made of light brown to dark brown, vertically standing wood poles are consistent horizontally across the landscape. In the background, distant views of the vertical, galvanized metal transmission line and slow, gradual rise in elevation lead to dark-colored landforms. The transmission lines and large, white, stacked crop bales in the midground draw the eye and are a focus of attention from this KOP location due to the dominance and prominence of the features within the broad, panoramic landscape and against the pale blue sky.

The proposed project would be approximately 1.5 miles south of this KOP location. Based on the inferior viewer perspective, the overall distance from the KOP, and the proposed project location in relation to the viewer, the proposed project would not be perceivable from this KOP due to the presence of existing vegetation and agricultural improvements and the prominence of the existing transmission line structures and stacked crop bales in the foreground and midground are the focus of viewer attention. The gen-tie would be perceivable, but would be similar in form, line, color, and texture to the existing transmission line infrastructure in the immediate area. Therefore, it is anticipated that there would be no perceived visual contrast created by the project within the existing landscape from this KOP.

4.1.2 *KOP 2: Norrish Road and Highline Road, Looking Southeast*

This KOP represents the view from local residences and vehicular traffic traveling south on Highline Road, northwest of the project site (see Figure 1). Views of the immediate foreground from this KOP are represented by perpendicular roads with light brown, uniform, rectangular, and white residential and agricultural buildings; light to dark grey, concave, concrete irrigation canals; smooth brown to dark

brown, vertical, wood and galvanized metal transmission lines; and fine, light tan soils intermixed with dark tan shrubs. The midground of the KOP includes geometric agricultural plots with light bright green to dark green vegetation divided by light tan access roads consisting of farming equipment. In the background, distant views of concentrated, upright trees are intermixed with the consistent, horizontal lines of low vegetation in agricultural plots; tall, vertical, galvanized metal transmission lines are visible and consistent across the horizon. The human-made, uniform, rectangular building structures in the foreground draw the eye and are a focus of attention from this KOP because of their prominence against the broad, panoramic landscape and the pale blue sky.

The proposed project area is approximately 2.3 miles southeast of this KOP location. Based on the inferior viewer perspective and the presence of existing features within the immediate foreground area that dominate the viewshed and obstruct views towards the proposed project, the project would not be perceivable from this KOP. In the midground area of the KOP, the irrigated agricultural fields influence visibility of project components due to the similar color characteristics; the light to dark grey tones blend in with the proposed project features. Therefore, it is anticipated that there would be no perceived visual contrast created by the project within the existing landscape from this KOP.

4.1.3 *KOP 3: Evan Hewes Highway and Nelson Pit Road*

This KOP represents the view of a passenger in a vehicle traveling southeast on Evan Hewes Highway west of the project site (see Figure 1). Views from this KOP are characterized by broad, panoramic views of flat, consistent, and horizontal terrain with isolated areas of light khaki to light brown desert shrubs and clustered, low, rounded, globular, moderately tall, green to dark green trees. In the immediate foreground, existing upright, geometric roadway signage is prominent within the vast, horizontal landscape. Distinct edges of exposed soft light tan soils and vegetation along access roads and a concave canal are prominent in the foreground. In the background, distant views of clustered trees with consistent agriculture fields visible across the horizon the lead to dark colored mountain landforms in the distance. The light tan horizontal access road and parallel canal in the foreground draw the eye to the isolated residence in the midground and are a focus of attention from this location because of their prominence in the broad, panoramic landscape.

The proposed project would be approximately 2.6 miles east of this KOP location. Based on the inferior viewer perspective, the proposed project location in relation to the viewer, the overall distance from the KOP, the presence of existing vegetation, and the isolated landforms in the background, the proposed project would not be perceivable from this KOP. From KOP 3, much of the project area is obscured by existing vegetation, residential and agricultural structures, and existing transmission lines. Therefore, it is anticipated that there would be no perceived visual contrast created by the project within the existing landscape from this KOP.

4.2 Glare Analysis

The analysis concluded that the project has the possibility to create low-potential afterimage (green ocular impact) and potential temporary afterimage (yellow ocular impact) glare for the receptors looking directly east at project site from KOP 3. Viewers at KOP 3 may experience glare from the northeastern-most project array area if no vegetation or structures are in the field of view. KOP 3 will have potential for glare for up to 133 minutes per year; the glare would occur from mid-March to mid-April and mid-August to mid-September, within the hour between 2:30PM and 3:30PM, for approximately 5 minutes per day. The analysis determined that the other array areas will not produce glare. The results from the solar glare analysis are provided in Appendix C.

Regarding the nearest airport (Holtville Airport, approximately 1.5 miles north of the project area), four potential flight paths were considered. During takeoff and landing procedures, airborne viewers (e.g., pilots) would be elevated in relation to the project area. The results of the glare analysis conducted for this project indicate that airborne viewers would not experience glare within the four, 2-mile-long takeoff and landing flight path segments analyzed by ForgeSolar established parameters to meet FAA requirements. This airport does not have an air traffic control tower, so no tower viewers were analyzed.

5 PRELIMINARY CEQA ANALYSIS

This technical report will inform the overall evaluation of potential environmental effects from the project in order to satisfy the requirements of the California Environmental Quality Act (CEQA). There are four CEQA criteria for aesthetics that the project must meet. Each criteria is presented here as a question, with preliminary assessments of project impacts to visual resources provided as answers.

1. Would the project have a substantial adverse effect on a scenic vista?

   No Impact. There are no designated scenic vistas in the project vicinity. As described above in Section 4.1, the project would not have a substantial adverse effect on the expansive views from the three KOPs. Rather, the thin horizontal edge of solar arrays and rectangular geometric shapes of the project facilities would be absorbed into the existing vegetation and built features with similar lines, forms, and colors that comprise the landscape. Therefore, no impacts to scenic vistas would occur.

2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

   No Impact. There are no designated or eligible scenic highways in the project vicinity.

3. Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

   Less Than Significant. The existing visual character from public viewpoints would not be substantially altered in the vicinity of the project site. From KOP 1, which represents an elevated view overlooking the project area, the proposed gen-tie line would be visible but would be mostly unnoticed due to the current existing structures that obscure the view. From KOP 2, the project visually blends in with the existing built features and irrigated agricultural fields between the viewer and the project area. The view from KOP 3 is mostly blocked by existing vegetation, residential and agricultural structures, and transmission lines running east to west across the landscape. As previously described, the project would not substantially degrade the existing visual character or quality of public views from this distance; rather, the horizontal and rectangular project facilities would appear to be absorbed into the existing vegetation and built features that comprise the broader landscape. The project would not substantially degrade existing visual character and quality and the impact would be less than significant.

4. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

   Less Than Significant. The project would not include any substantial source of nighttime light in the vicinity of the project site. Any lighting required for safety and security within the project site would be hooded and oriented downward.

The glare analysis for the project concluded that viewers at KOP 3 may experience glare from the northeastern-most project array area if no vegetation or structures are in the field of view, and that the other array areas will not produce glare (see Appendix C). KOP 3 will have potential for glare for approximately 10 minutes a day for 2 months a year. However, given the presence of existing vegetation and structures, it likely that these effects would be less than significant.

5.1 Suggested Mitigation Measures

Project impacts were evaluated against the CEQA significance criteria above to identify opportunities to mitigate for impacts to aesthetics and visual resources resulting from sources of visual contrast and glare that would potentially affect views in the area. Mitigation measures such as the use of non-reflective materials, finishes and surface treatments on project components in addition to vegetation screening, would further reduce visual contrast and glare associated with the project.

Visual barriers, to include vegetation, are the most effective at mitigating glare from solar arrays when the vegetation is located as close to the glare source as possible. If vegetation is used, native and naturalized plants should be specified to match or complement existing vegetation within the area. Existing vegetation within and surrounding the project area should be maintained and preserved to the greatest extent possible. Preserving existing vegetation will reduce the project's overall impact on the existing health of soils, wildlife, cost, and visual aesthetics.

6 LITERATURE CITED

Bureau of Land Management (BLM). 1986. Manual H-8431. Visual Resource Contrast Rating. BLM. Available at: https://www.blm.gov/sites/blm.gov/files/program_recreation_visual%20resource%20management_quick%20link_BLM%20Handbook%20H-8431-1,%20Visual%20Resource%20Contrast%20Rating.pdf. Accessed December 2020.

Forge Solar. 2020. ForgeSolar Help, Guidance and information on using ForgeSolar analysis tools. Available at: https://www.forgesolar.com/help/. Accessed December 2020.

APPENDIX A

Contrast Rating Worksheets

VISUAL CONTRAST RATING WORKSHEET

Date: 12/2/2020

Project Name: **Vikings Solar Energy**	Key Observation Point Number: **KOP 1**
Project Type: Solar Facility	Key Observation Point Name: Interstate 8 and Evans Hewes Highway
Evaluator's Names: Spenser Branch/ Chris Bockey	Photo Numbers: 2198-2200

CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Smooth, broad, flat agricultural land leading up to undulating mountains in the distant background	Distinctive geometric, agricultural fields Clustered, vertical, amorphic deciduous trees Isolated areas of low rounded globular shrubs	Vertical, thin, transmission line structures with distinctive horizontal connector arms Irregular to geometric elements of agricultural equipment Rectangular, linear stacked crop bails Rectangular, concave, continuous irrigation ditches
LINE	Distinctive, horizontal, continuous lines	Irregular, broken shrubs in foreground Distinct edges of exposed soils and agricultural vegetation at transitions	Bold, vertical transmission line structures with softly curved horizontal transmission line wires
COLOR	Variations of light khaki to light brown exposed soils	Light tan-muted rust-light grey shrubs Yellow-green agriculture fields	Bright-white crop bails Galvanized, grey to silver transmission structures Light brown to dark brown tones in wood transmission line structures Light grey to dark grey concrete road and irrigation ditches
TEX-TURE	Smooth, consistent, directional Fine, soft soils	Smooth, carpet-like texture of agriculture fields Clustered, coarse areas of shrubs and deciduous tress	Continuous and repetitive transmission line infrastructure Isolated and geometric, smooth surfaced crop bail covers

PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No perceived change	No perceived change	Thin, horizontal or regular edge of solar arrays Rectangular, geometric battery storage infrastructure Geometric, angular transmission line interconnect facility
LINE	No perceived change	No perceived change	Horizontal line of solar array edge Horizontal and vertical lines of battery storage facility
COLOR	No perceived change	No perceived change	Dark subdued grey to blue black of solar arrays Light grey earth tones of battery storage facility Muted reflective grey substation and transmission line infrastructure

TEXTURE	No perceived change	No perceived change	Smooth, continuous, organized, solar facility infrastructure Vertical, repetitive transmission line structures

CONTRAST ANALYSIS

DEGREE OF CONSTRAST		FEATURES												
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form				X				X			X		
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X				X	

Recommended Mitigation Measures

Materials and surface treatments for structures and roads should repeat and/or blend with the existing form, line, color, and texture of the surrounding landscape. For example, if the project will be viewed against an earthen or other non-sky background, appropriately colored materials should be selected to help blend structures with the project's backdrop.

Unless safety or functional requirements preclude it, all structures should be color treated to reduce contrasts with existing landscape.

Materials, coatings, or paints that have little or no reflectivity should be used on structures. Semi-gloss finishes should be used rather than flat or gloss finishes. Substation equipment should be specified with a low-reflectivity, neutral finish. Insulators at substations should be non-reflective. The surfaces of substation structures should be given low reflectivity finishes with neutral colors to minimize the contrast of the structures with their backdrops. Security fence surrounding the substations should have a dulled, darkened finish to reduce contrast.

Electric transmission towers should be color treated to reduce contrasts with the existing landscape. Monopole towers should have a low-reflectivity treatment. Where transmission facilities using monopole towers are located within the same ROW or corridor, the color treatment should match the existing facilities within the ROW, unless they contrast with the visual backdrop.

Notes

VISUAL CONTRAST RATING WORKSHEET

Date: 12/2/2020

Project Name: **Vikings Solar Energy**	Key Observation Point Number: **KOP 2**
Project Type: Solar Facility	Key Observation Point Name: Norrish Road and Highline Road
Evaluator's Names: Spenser Branch/Chris Bockey	Photo Numbers: 2452-2453

CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Endless, broad, flat, vast open terrain	Distinct agricultural plot Cluster of deciduous trees in foreground and sporadic areas of trees in the background	Isolated rectangular farming buildings Concave concrete canal Consistent transmission lines in foreground and background Prominent concrete irrigation canal
LINE	Perpendicular, consistent lines through terrain	Irregular, broken shrubs in foreground Distinct edges of exposed agriculture soils	Perpendicular road and vertical transmission lines with curved sagging conductor wires Rectangular concave irrigation ditch Horizontal continuous elements
COLOR	Light brown-dark brown soils	Light tan-brown desert shrubs Yellow green-dark green tees Bright green-green vegetation in midground	Light brown to dark brown tones in wood transmission line Light grey to dark grey concrete irrigation ditch Light grey-grey water irrigating agriculture
TEX-TURE	Smooth, consistent terrain Fine, smooth soils	Inconsistent patches of trees Smooth low laying clusters of shrubs	Uniform farming buildings Ordered consistent transmission lines Smooth matt concrete road and canal

PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No perceived change	No perceived change	Thin or horizontal or regular edge for solar arrays Geometric isolation Rectangular battery storage Transmission interconnect
LINE	No perceived change	No perceived change	Horizontal line from solar array edge Horizontal and vertical lines from battery storage
COLOR	No perceived change	No perceived change	Dark subdued grey to blue black solar arrays Light grey earth tones from battery storage Muted reflective grey substation and transmission
TEX-TURE	No perceived change	No perceived change	Smooth solar facility Vertical transmission lines

CONTRAST ANALYSIS

DEGREE OF CONSTRAST		FEATURES												
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form				X				X			X		
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X				X	

Recommended Mitigation Measures

Materials and surface treatments for structures and roads should repeat and/or blend with the existing form, line, color, and texture of the surrounding landscape. For example, if the project will be viewed against an earthen or other non-sky background, appropriately colored materials should be selected to help blend structures with the project's backdrop.

Unless safety or functional requirements preclude it, all structures should be color treated to reduce contrasts with existing landscape.

Materials, coatings, or paints that have little or no reflectivity should be used on structures. Semi-gloss finishes should be used rather than flat or gloss finishes. Substation equipment should be specified with a low-reflectivity, neutral finish. Insulators at substations should be non-reflective. The surfaces of substation structures should be given low reflectivity finishes with neutral colors to minimize the contrast of the structures with their backdrops. Security fence surrounding the substations should have a dulled, darkened finish to reduce contrast.

Electric transmission towers should be color treated to reduce contrasts with the existing landscape. Monopole towers should have a low-reflectivity treatment. Where transmission facilities using monopole towers are located within the same ROW or corridor, the color treatment should match the existing facilities within the ROW, unless they contrast with the visual backdrop.

Notes

VISUAL CONTRAST RATING WORKSHEET

Date: 12/2/2020

Project Name: **Vikings Solar Energy**	Key Observation Point Number: **KOP 3**
Project Type: Solar Facility	Key Observation Point Name: Evans Hewes Highway and Nelson Pit Road
Evaluator's Names: Spenser Branch/Chris Bockey	Photo Numbers: 2276-2277

CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Broad, flat fast land that appears endless along horizon	Distinct agricultural plots Cluster of deciduous trees in midground	Isolated rectangular buildings Consistent transmission lines in and background Prominent concave concrete irrigation canal
LINE	Horizontal perpendicular and consistent lines appear through terrain	Consistent shrubs parallel canal Distinct edges of exposed agriculture soils Horizontal continuous agriculture plots	Vertical transmission lines in background Vertical poles and street signs in foreground Circular concrete canal
COLOR	Light tan-dark brown soils Green-brown-light tan desert shrubs	Light tan-brown desert shrubs Light green-dark green tees Bright green- dark green agriculture	Light brown to dark brown tones in wood street sign Light grey to dark grey concrete irrigation ditch Bright white buildings Galvanized transmission lines
TEX-TURE	Smooth, consistent terrain Fine, smooth soils	Inconsistent clustered areas of trees Smooth low laying clusters of shrubs Soft smooth agriculture	Consistent transmission line in background Rough, cracked uneven road

PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No perceived change	No perceived change	Thin or horizontal or regular edge for solar arrays Geometric isolation Rectangular battery storage Transmission interconnect
LINE	No perceived change	No perceived change	Horizontal line from solar array edge Horizontal and vertical lines from battery storage
COLOR	No perceived change	No perceived change	Dark subdued grey to blue black solar arrays Light grey earth tones from battery storage Muted reflective grey substation and transmission
TEX-TURE	No perceived change	No perceived change	Smooth solar facility Vertical transmission lines

CONTRAST ANALYSIS

DEGREE OF CONSTRAST		FEATURES												
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form				X				X			X		
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X				X	

Recommended Mitigation Measures

Materials and surface treatments for structures and roads should repeat and/or blend with the existing form, line, color, and texture of the surrounding landscape. For example, if the project will be viewed against an earthen or other non-sky background, appropriately colored materials should be selected to help blend structures with the project's backdrop.

Unless safety or functional requirements preclude it, all structures should be color treated to reduce contrasts with existing landscape.

Materials, coatings, or paints that have little or no reflectivity should be used on structures. Semi-gloss finishes should be used rather than flat or gloss finishes. Substation equipment should be specified with a low-reflectivity, neutral finish. Insulators at substations should be non-reflective. The surfaces of substation structures should be given low reflectivity finishes with neutral colors to minimize the contrast of the structures with their backdrops. Security fence surrounding the substations should have a dulled, darkened finish to reduce contrast.

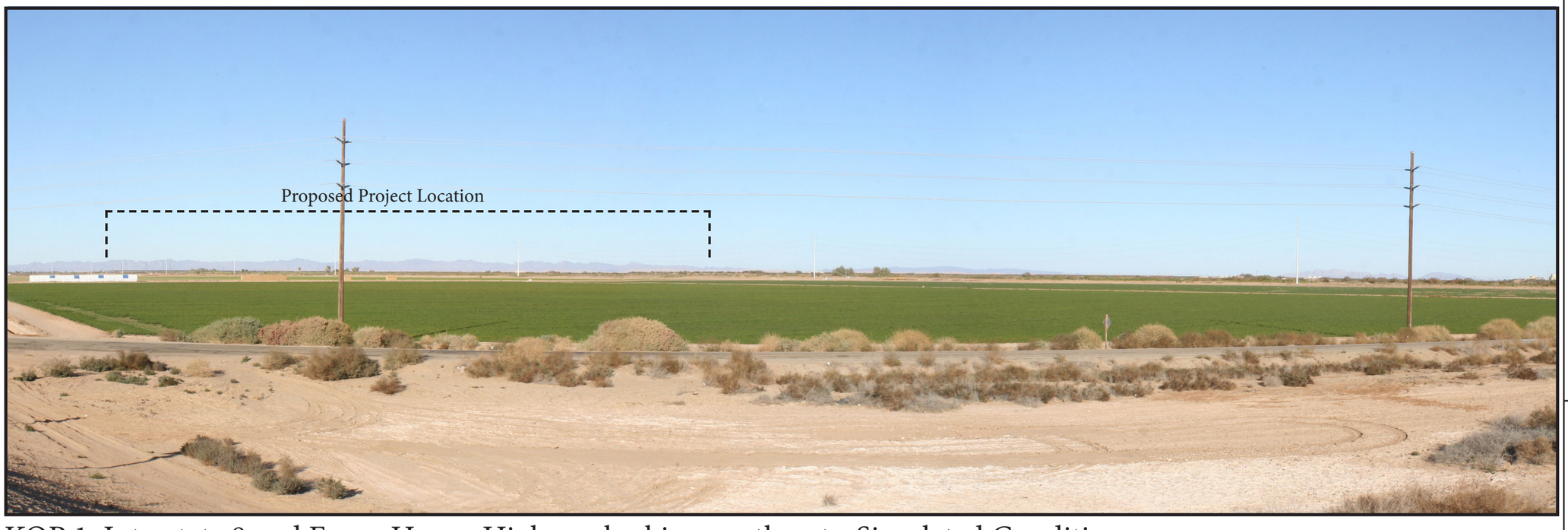
Electric transmission towers should be color treated to reduce contrasts with the existing landscape. Monopole towers should have a low-reflectivity treatment. Where transmission facilities using monopole towers are located within the same ROW or corridor, the color treatment should match the existing facilities within the ROW, unless they contrast with the visual backdrop.

Notes

APPENDIX B

Visual Simulations

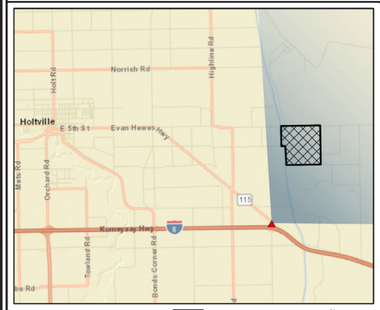
KOP 1: Interstate 8 and Evens Hewes Highway looking northeast - Existing Condition



KOP 1: Interstate 8 and Evens Hewes Highway looking northeast - Simulated Condition

Vikings Solar Energy Storage Project

KOP 1: Interstate 8 and Evens Hewes Highway



Base Photographic Documentation

Date	12/02/2020
Time (24H)	14:20
Longitude (°)	-115.285089
Latitude (°)	32.774261
Viewpoint Elevation (ft)	29
Camera Height (m)	1.5
Camera Heading(deg.)	15

Camera Information

Camera Make & Model	Canon 20D
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	Canon EFS 18-55 mm
Lens Focal Legth	24mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth (°)	281.09
Sun Elevation (°)	-58.22
Lighting Angle on Project	Back Lit
Weather Conditions	Sunny
Avg. Predicted Visibility	10 miles
Tempature (°F)	72
Humidity (%)	40

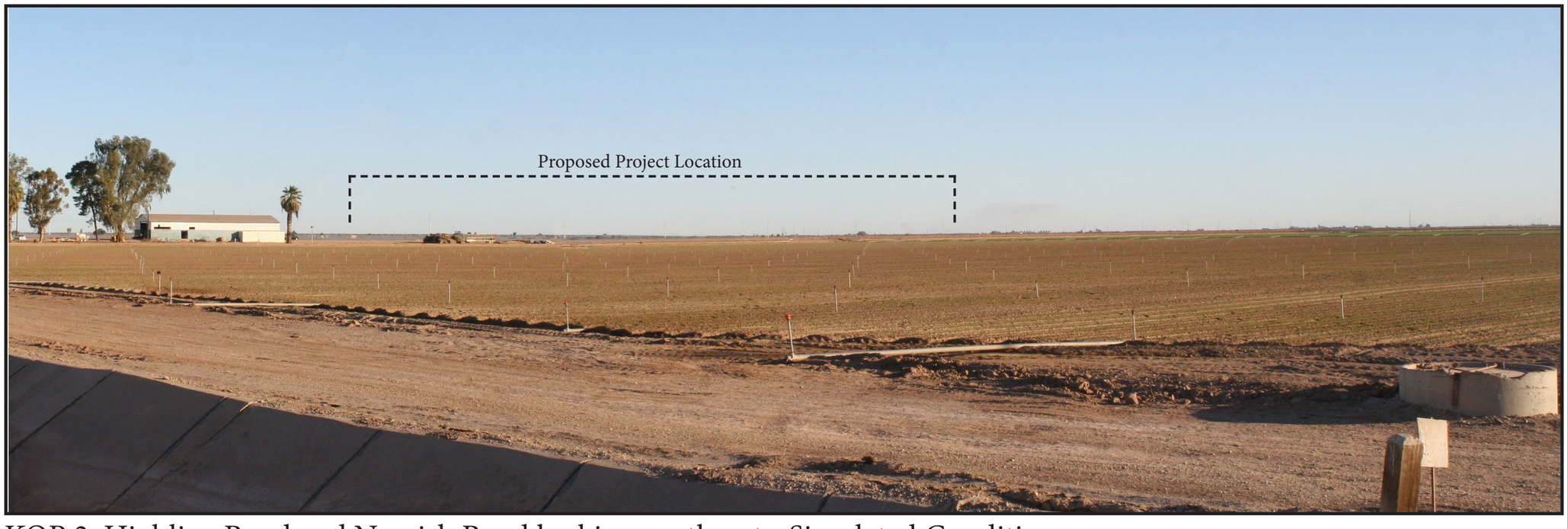
Proposed Infrastructure Information

Closest Distance to Project	1.55 miles
Solar Array Max. Height	10 ft
Battery Storage Max Height	10 ft
Gen-tie Max Height	120 ft

Simulation was prepared using information provided by Apex Energy Solutions, LLC. Solar facility locations, colors, and heights may differ based on final engineering and design.

SWCA® ENVIRONMENTAL CONSULTANTS

KOP 2: Highline Road and Norrish Road looking southeast - Existing Condition



KOP 2: Highline Road and Norrish Road looking southeast - Simulated Condition

Vikings Solar Energy Storage Project

KOP 2: Highline Road and Norrish Road

Base Photographic Documentation

Date	12/02/2020
Time (24H)	15:20
Longitude (°)	-115.310505
Latitude (°)	32.832418
Viewpoint Elevation (ft)	-1
Camera Height (m)	1.5
Camera Heading(deg.)	131

Camera Information

Camera Make & Model	Canon 20D
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	Canon EFS 18-55 mm
Lens Focal Legth	24mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth (°)	298.08
Sun Elevation (°)	-70.08
Lighting Angle on Project	Back Lit
Weather Conditions	Sunny
Avg. Predicted Visibility	10 miles
Tempature (°F)	72
Humidity (%)	40

Proposed Infrastructure Information

Closest Distance to Project	1.55 miles
Solar Array Max. Height	10 ft
Battery Storage Max Height	10 ft
Gen-tie Max Height	120 ft

Simulation was prepared using information provided by Apex Energy Solutions, LLC. Solar facility locations, colors, and heights may differ based on final engineering and design.

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KOP 3: Evans Hewes Highway and Nelson Pit Road looking east - Existing Condition

KOP 3: Evans Hewes Highway and Nelson Pit Road looking east - Simulated Condition

Vikings Solar Energy Storage Project

KOP 3:Evans Hewes Highway and Nelson Pit Road

Base Photographic Documentation

Date	12/02/2020
Time (24H)	15:00
Longitude (°)	-115.325384
Latitude (°)	32.803724
Viewpoint Elevation (ft)	-5
Camera Height (m)	1.5
Camera Heading(deg.)	90

Camera Information

Camera Make & Model	Canon 20D
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	Canon EFS 18-55 mm
Lens Focal Legth	24mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth (°)	288.78
Sun Elevation (°)	-67
Lighting Angle on Project	Back Lit
Weather Conditions	Sunny
Avg. Predicted Visibility	10 miles
Tempature (°F)	72
Humidity (%)	40

Proposed Infrastructure Information

Closest Distance to Project	1.55 miles
Solar Array Max. Height	10 ft
Battery Storage Max Height	10 ft
Gen-tie Max Height	120 ft

Simulation was prepared using information provided by Apex Energy Solutions, LLC. Solar facility locations, colors, and heights may differ based on final engineering and design.

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APPENDIX C

Solar Glare Analysis

ForgeSolar

Site Configuration: Vikings Solar

Project site configuration details and results.

Created **Jan. 11, 2021 1:26 p.m.**
Updated **Jan. 11, 2021 1:31 p.m.**
DNI **varies** and peaks at **1,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC0**
Site Configuration ID: 47824.8552

Summary of Results

Glare with potential for temporary after-image predicted

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	30.0	180.0	1	133	-

Component Data

PV Array(s)

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: PV array 1
Axis tracking: Fixed (no rotation)
Tilt: 30.0 deg
Orientation: 180.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 24,710,932 sq-ft

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.810676	-115.263538	33.92	10.00	43.92
2	32.810660	-115.281104	25.04	10.00	35.04
3	32.803254	-115.280664	22.21	10.00	32.21
4	32.803254	-115.276329	39.44	10.00	49.44
5	32.796076	-115.276372	37.03	10.00	47.03
6	32.796076	-115.263476	33.39	10.00	43.39

2-Mile Flight Path Receptor(s)

Name: FP 1
Description:
Threshold height : 50 ft
Direction: 270.0 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	32.844902	-115.259474	55.33	50.00	105.34
2-mile point	32.844907	-115.225020	77.35	581.44	658.79

Name: FP 2
Description:
Threshold height : 50 ft
Direction: 90.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	32.845046	-115.278113	57.80	50.00	107.80
2-mile point	32.845157	-115.312567	-2.68	663.94	661.26

Name: FP 3
Description:
Threshold height : 50 ft
Direction: 135.9 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	32.844311	-115.276263	55.57	50.00	105.58
2-mile point	32.865074	-115.300240	0.16	658.87	659.03

Name: FP 4
Description:
Threshold height : 50 ft
Direction: 313.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	32.834324	-115.264681	40.55	50.00	90.55
2-mile point	32.814561	-115.239535	59.98	584.02	644.00

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	32.774646	-115.285503	24.69	5.00	29.69
OP 2	32.832699	-115.310713	-0.87	5.00	4.13
OP 3	32.803762	-115.325448	-3.77	5.00	1.23

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	30.0	180.0	1	133	-	-

Click the name of the PV array to scroll to its results

PV & Receptor Analysis Results detailed results for each PV array and receptor

PV array 1 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	1	133

PV array 1 - Receptor (FP 1)

No glare found

PV array 1 - Receptor (FP 2)

No glare found

PV array 1 - Receptor (FP 3)

No glare found

PV array 1 - Receptor (FP 4)

No glare found

PV array 1 - OP Receptor (OP 1)

No glare found

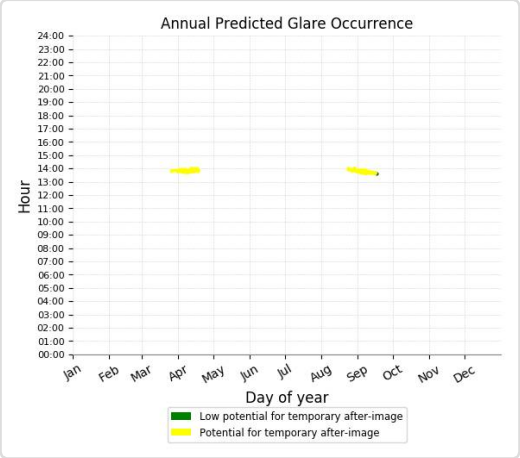
PV array 1 - OP Receptor (OP 2)

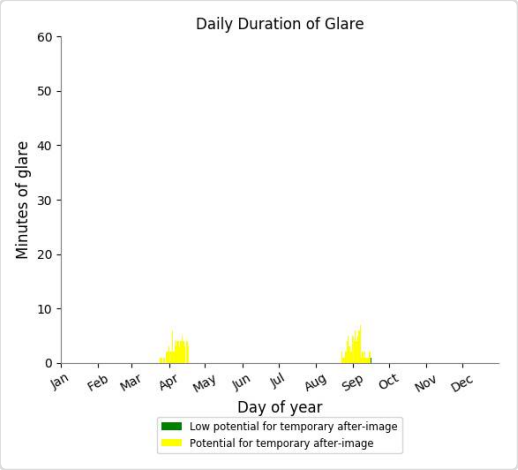
No glare found

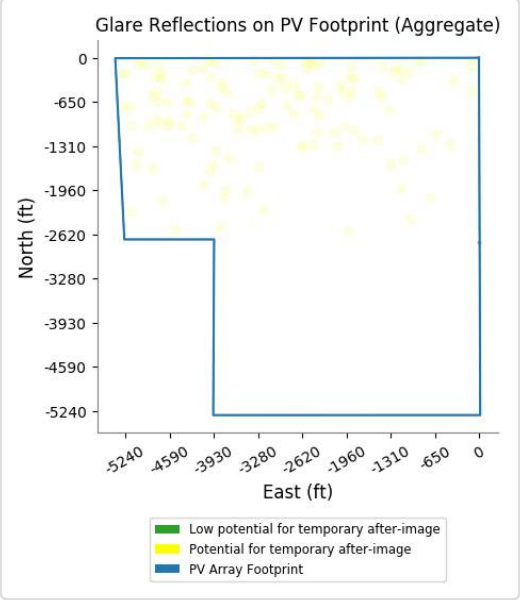
PV array 1 - OP Receptor (OP 3)

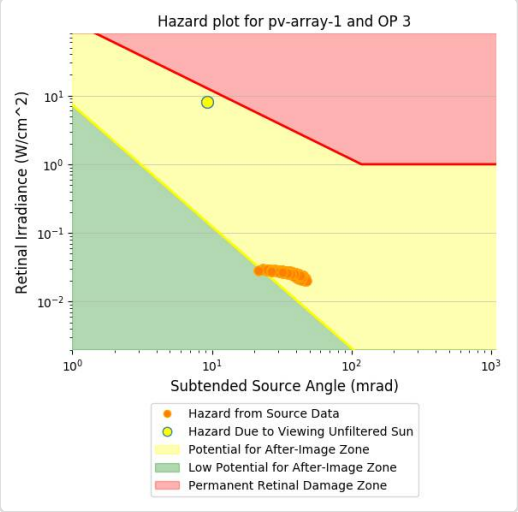
PV array is expected to produce the following glare for receptors at this location:

- 1 minutes of "green" glare with low potential to cause temporary after-image.
- 133 minutes of "yellow" glare with potential to cause temporary after-image.









Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. I should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.